Conservation Plan for the Illinois Chorus Frog

Salt Creek Township Solar Site in Mason County, Illinois

Prepared for:

Illinois Department of Natural Resources

Prepared & Submitted by:

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On behalf of:

Salt Creek Township Solar, LLC

WSP Project No. 325222263

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CONTENTS

TABLES

FIGURES

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

AC	alternating current
AIMA	Agricultural Impact Mitigation Agreement
BMP	Best Management Practice
DC	direct current
EcoCAT	Ecological Compliance Assessment Tool
EO	Element Occurrence
ICF	Illinois Chorus Frog
IDNR	Illinois Department of Natural Resources
ITA	Incidental Take Authorization
kV	kilovolt
MISO	Midcontinent Independent System Operator
mph	miles per hour
MWac	Megawatt Alternating Current
NLCD	National Land Cover Database
NRCS	Natural Resources Conservation Service
O&M	operations and maintenance
PV	photovoltaic
SCADA	supervisory control and data acquisition
SESC	Soil Erosion and Sedimentation Control
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
WSP	WSP USA Environment & Infrastructure, Inc.

Illinois Department of Natural Resources

CONSERVATION PLAN

(*Application for an Incidental Take Authorization*)
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

PROJECT APPLICANT: Salt Creek Township Solar, LLC

PROJECT NAME: Salt Creek Township Solar Project

COUNTY: Mason County

AMOUNT OF IMPACT AREA: Approximately 2.65 acres Project-lifetime impact

1. INTRODUCTION

Salt Creek Township Solar, LLC (Applicant) is proposing to develop a 50-megawatt alternating current (MWac) ground-mounted utility-scale solar project on approximately 290 acres of the 580-acre Project Area located immediately east of Route 29 and north and south of CR 850N, southwest of Mason City, Illinois in Mason County (Figure 1). On behalf of the Applicant, WSP USA Environment & Infrastructure, Inc. (WSP) has prepared this Conservation Plan for the Illinois chorus frog (ICF; *Pseudacris illinoensis*) in support of the Applicant's efforts to develop the Salt Creek Township Solar Project (Project). This Salt Creek Township Solar Conservation Plan has been prepared in accordance with Title 17, Chapter I (c), Section 1080 of the Illinois Administrative Code (Incidental Taking of Endangered or Threatened Species). In accordance with Section 1080, the Illinois Department of Natural Resources (IDNR) can authorize the incidental take of species listed as endangered or threatened by the State of Illinois with an approved Conservation Plan.

2. LIKELY IMPACTS

2.1 Purpose and Need

Consultation with the IDNR (Appendix A), including an Illinois Ecological Compliance Assessment Tool (EcoCAT) review (#2112025) dated April 4, 2021, indicated that the ICF, listed as threatened pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10), may potentially occur in the vicinity of the Project Area. Further consultation with IDNR in June 2022 indicated the potential need for Incidental Take Authorization (ITA) for the ICF (Appendix A).

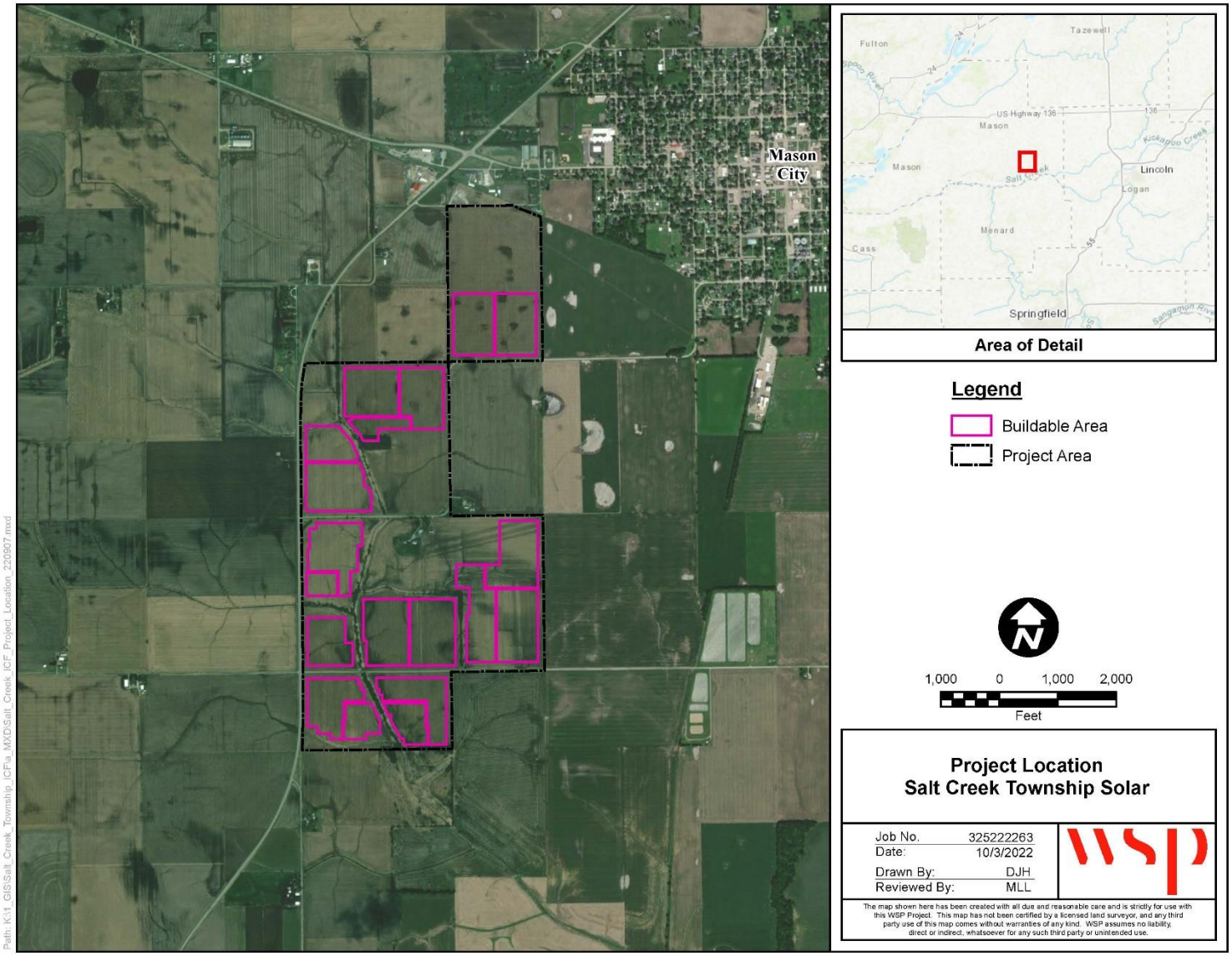

Figure 1. Salt Creek Township Solar Project Location

According to the Illinois Natural Heritage Database, the nearest Element Occurrences (EOs) for the ICF are approximately 9,000 feet (1,500 meters) from the Project Area (Figure 2). Weekly anuran call surveys and visual site inspections of the Project Area were conducted one night per week for ten weeks, from March 9th to May 9th, 2022, to detect the potential occurrence of the ICF (Appendix B). The call surveys determined that potential breeding habitat for the ICF may exist within the Project Area (Figure 3). However, the Project Area is largely composed of regularly disturbed agricultural land with mostly silt loam and silty clay loam soils, which does not provide suitable burrowing habitat for this species.

This Conservation Plan addresses the Project's potential effects to the ICF due to the construction of a 50-MWac utility-scale solar project. The Project will connect to the Midcontinent Independent System Operator (MISO) transmission system that runs just north of the Project Area. The Project has been developed and designed to optimize the solar resource while minimizing impacts to natural resources and suitable habitat. This Project is part of the effort to develop clean renewable energy sources within the state of Illinois and get the state closer to its statutory requirements, established recently through SB2408, to reach 100 percent by 2050. Subject to the requirements of §1-75, the state is required to procure up to 45,000,000 Renewable Energy Credits annually from utility-scale solar projects by 2030 – 55 percent of which must come from photovoltaics projects, which this Project intends to contribute towards.

2.2 Area to be Affected

The Project Area is located within Salt Creek and Mason City townships, southwest of the City of Mason City, in Mason County, Illinois along Illinois Route 29 in Sections 7 and 18 of Township 20N, Range 5W, and Sections 12, 13, and 24 of Township 20N, Range 6W (Figure 1). The Project Area consists of approximately 580 acres situated on agricultural land and bordered to the west by Illinois Route 29, to the east, south, and north by Old Route 29/S. Keefer Street, and to the south and north by County Road 800N. The “Buildable Area” measures approximately 287.9 acres and includes the limits of construction of the solar project. This Buildable Area has been sited to avoid wetlands and waterways, IDNR-documented ICF breeding areas, sandy soils, and forested areas to the extent practicable (Figure 3).

The Project Area is located on privately owned property. The Applicant has entered into solar energy land rights agreements on the properties on which the Project will be developed. These agreements will be in place for the life of the Project, which is anticipated to be approximately thirty (30) years. There is a lease between Salt Creek Township Solar, LLC and the Charles L. McNeil Family Trust and the Lucile O. McNeil Trust for 25 years with two 5-year extension options. The approved application for special use from Mason County for the Salt Creek Township Solar Project is included in Appendix F.

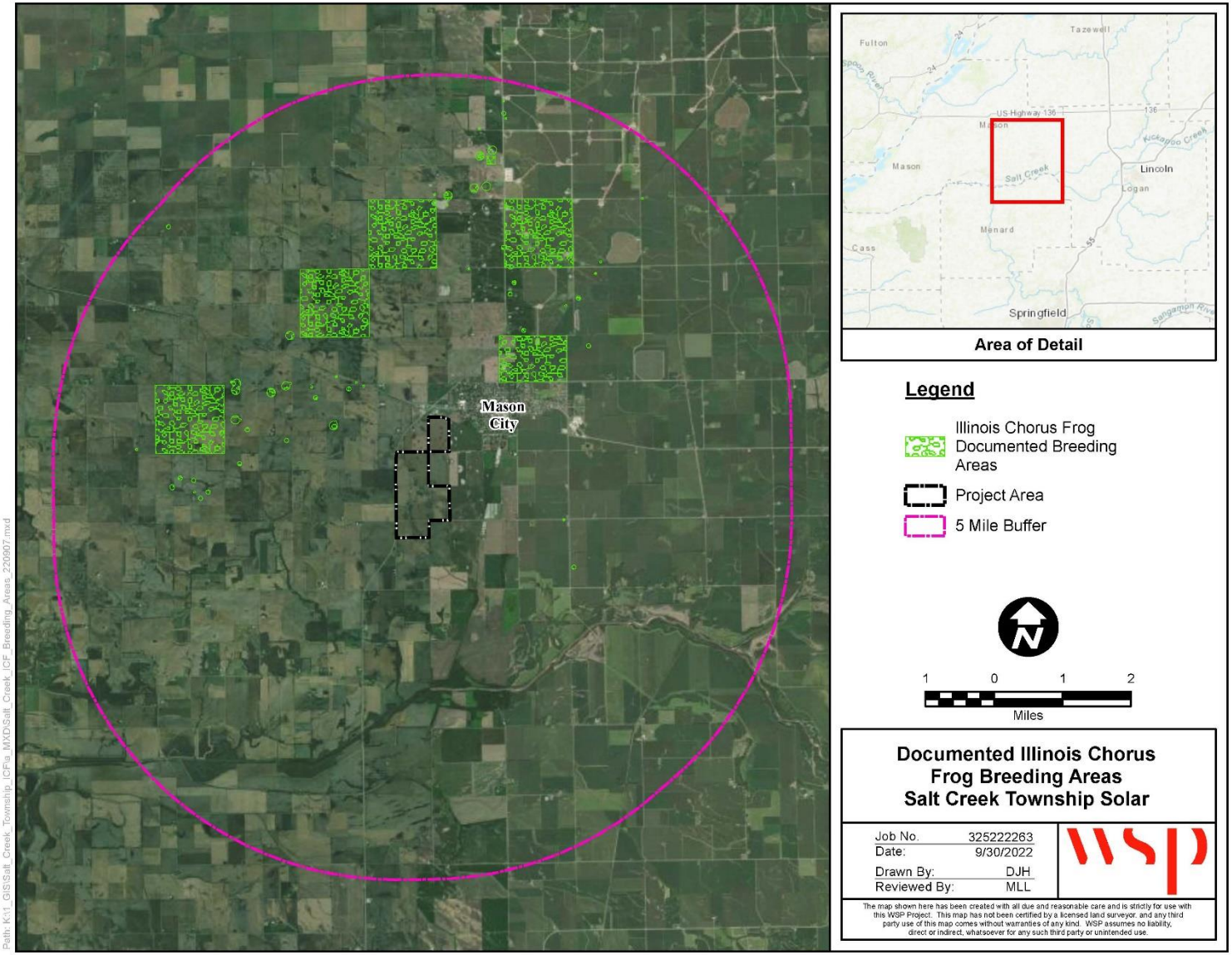

Figure 2. Illinois Chorus Frog IDNR Documented Breeding Areas in Mason County

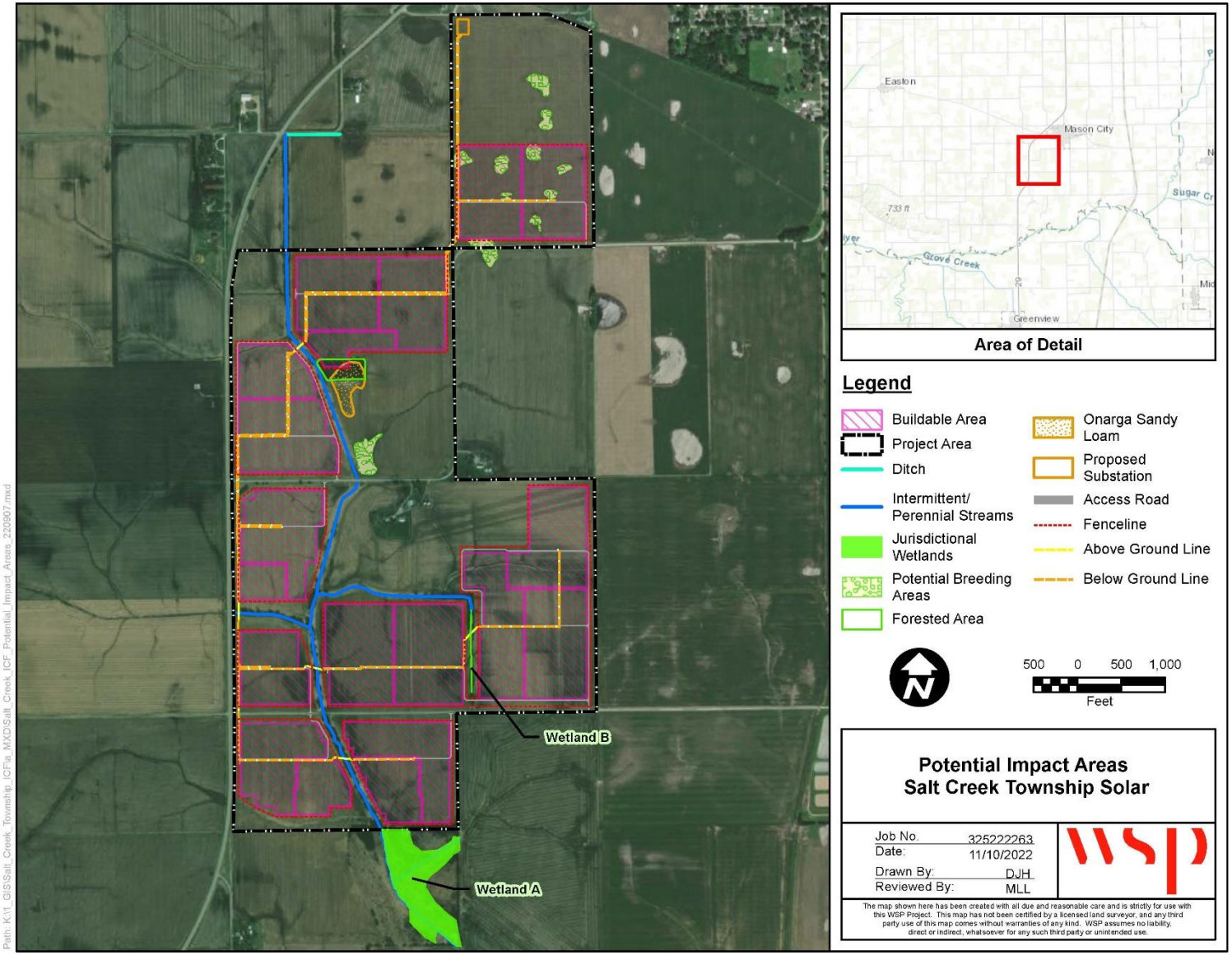

Figure 2-3. Salt Creek Township Solar Project Buildable Area and Environmental Constraints

The Project is a 50-MWac ground-mounted utility solar energy facility capable of providing clean, renewable electricity to thousands of Illinois homes. The Project components will include photovoltaic (PV) solar panels that will be mounted on a single-axis tracking system with a 60+/- degree tilt, along with the associated infrastructure of above-ground low voltage cable management system, electric inverters, and transformers, underground electrical collection system, electrical collector substation, overhead transmission line, point of interconnection switchyard, an operations and maintenance (O&M) building, solar met stations, supervisory control and data acquisition (SCADA) hardware, control house for protective relay panels and site controllers, private access roads with gated ingress/egress points, security fencing and any associated facilities. Temporary facilities associated with construction will include construction laydown yards. Collectively, the facilities listed in this paragraph comprise the "Project Facilities". Project Facilities on the Buildable Area are concentrated primarily on the open, undeveloped fields of the Project Area.

Construction of the Project Facilities will involve minimal site preparation such as clearing of vegetation or grading due to the Buildable Area being primarily an open cultivated, flat agricultural field. The Project construction will include the following:

- Installation of temporary silt fencing and best management practices (BMPs) to protect sensitive resources
- Installation of security fence
- Installation of graveled access roads
- Installation of the foundation piles for the solar panel arrays (via driven steel piers) into the ground
- Placement of the racking and motors for the solar panel arrays on the foundation piles
- Placement of PV panels on the racking system
- Installation of inverters and medium voltage transformers on foundation piles or concrete pads
- Installation of alternating current (AC) electric collection lines via open-cut trenching or boring methods
- Installation of direct current (DC) electric collection lines via above ground CAB hanger system
- Grading, subbase installation for the Project substation site, O&M site, and point of interconnection
- Installation of substation equipment and control house security fencing, lighting, and related equipment
- Installation of drilled concrete piers and mat foundations for substation area
- Installation of solar met stations and control house for protective relay panels and site controllers and other monitoring equipment
- Temporarily disturbed construction and access areas will be restored, revegetated, and returned to pre-construction conditions

Based on land use/land cover information obtained from the National Land Cover Database (NLCD) (Table 1) and field review, the Project Area is comprised primarily of row crop agricultural land (approximately 95 percent), with an area of grassland/pasture with sparse shrubs and/or trees in the southeastern portion of the site (Terracon 2021; Dewitz 2019). The dominant plant species observed in the row crop agricultural upland portions of the Project Area were remnants of corn (*Zea mays*) and purple deadnettle (*Lamium purpureum*), with boundary areas containing Queen Anne's lace (*Daucus carota*), reed canary grass (*Phalaris arundinacea*), and fescue (*Festuca ovina*). The dominant plant species observed in the shrub-scrub upland portions of the site were hawthorn (*Crataegus* sp.), honey locust (*Gleditsia triacanthos*), amur honeysuckle (*Lonicera maackii*), garlic mustard (*Alliaria petiolata*), and old field blackberry (*Rubus alumnus*). There is one small, forested area in the north-central portion of the site, located on the eastern side of the main channel draining north to south through the Project Area. The dominant plant species observed in the forested uplands, which were predominantly located in the north-central portion of the Project Area, consisted of black cherry (*Prunus serotina*), red maple (*Acer rubrum*), amur honeysuckle, Osage-orange (*Maclura pomifera*), black locust (*Robinia pseudoacacia*), and hackberry (*Celtis occidentalis*) (Terracon 2021).

Table 1. Land Cover within the Project Area and Buildable Area

	Project Area		Buildable Area	
Land Classification	**Acres**	**Percent**	**Acres**	**Percent**
Cultivated Crops	550.2	94.9%	287.6	99.9%
Developed, High Intensity	0.1	0.0%	0.0	0.0%
Developed, Low Intensity	11.6	2.0%	0.0	0.0%
Developed, Medium Intensity	1.1	0.2%	0.0	0.0%
Developed, Open Space	12.9	2.2%	0.0	0.0%
Hay/Pasture	2.6	0.4%	0.1	0.0%
Mixed Forest	1.1	0.2%	0.2	0.1%
Total	**579.7**	**100%**	**287.9**	**100%**

Source: Dewitz 2019

A Waters of the U.S. delineation field survey was conducted in the Project Area on April 19, 2021. Two wetlands totaling 13.4 acres and four streams totaling 13,816 linear feet (Table 2 and Figure 3) were observed within the Project Area (Terracon 2021; Appendix C). The two delineated wetlands were identified as palustrine emergent (PEM; Wetland A) and PEM/palustrine forested (PFO; Wetland B) types, as described by Cowardin et al. (1979).

Agricultural drains/grassed erosion control features were also observed across the Project Area. Additionally, a roadside ditch (630 linear feet) that discharges into Stream 4 was observed along the northern boundary on the southern side of County Road 950N. These features are not considered to be jurisdictional.

A request for an Approved Jurisdictional Determination was submitted to USACE on May 24, 2021, and the USACE approved the determination on July 15, 2021 (Appendix C). As shown in Figure 3, the Buildable Area has been sited to avoid direct impacts to all delineated Waters of the U.S. Therefore, permitting under Section 404 of the Clean Water Act is not required.

Table 2. Wetlands on the Project Area

Wetland	Size (Acres)	Cowardin Classification	Water Sources	USACE Jurisdictional (Y/N)
Wetland A	13.24	PEM	Precipitation, Overland Flow, Stream 1	Y
Wetland B	0.15	PEM/PFO	Precipitation, Overland Flow	Y
Total	**13.39**			

Source: Terracon 2021
PEM = Palustrine emergent wetland
PFO = Palustrine forested wetland

As mapped by the Natural Resources Conservation Service (NRCS), soils within the Buildable Area are comprised of 87.6 acres (30.4 percent) Tama silt loam at 5-10 percent slopes, 79.3 acres (27.5 percent) Tama silt loam at 2-5 percent slopes, 39.6 acres (13.8 percent) Ipava silt loam, 33.0 acres (11.5 percent) Tama silt loam at 0-2 percent slopes, 15.1 acres (5.2 percent) Edgington silt loam, with remaining soil types less than 15 percent of the Buildable Area. Only approximately 0.05 acres (0.02 percent) of the Buildable Area consists of sandy soils (Onarga sandy loam) that may be suitable for ICF upland habitat (Table 3 and Figure 4).

Table 3. Soils of the Project Area and Buildable Area

Soil Type	Project Area		Buildable Area		Sandy (Y/N)
	Acres	Percent	Acres	Percent	
Onarga sandy loam, 2 to 5 percent slopes (150B)	3.1	0.5%	0.05	0.02%	Y
Edgington silt loam, 0 to 2 percent slopes (272A)	27.7	4.8%	15.1	5.2%	N
Tama silt loam, 0 to 2 percent slopes (36A)	84.3	14.5%	33.0	11.5%	N
Tama silt loam, 2 to 5 percent slopes (36B)	122.4	21.1%	79.3	27.5%	N
Tama silt loam, 5 to 10 percent slopes, eroded (36C2)	135.3	23.3%	87.6	30.4%	N
Ipava silt loam, 0 to 2 percent slopes (43A)	87.4	15.1%	39.6	13.8%	N
Lawndale silt loam, 0 to 2 percent slopes (683A)	2.3	0.4%	0.0	0.0%	N
Broadwell silt loam, 0 to 2 percent slopes (684A)	13.3	2.3%	10.6	3.7%	N
Broadwell silt loam, 2 to 5 percent slopes (684B)	3.2	0.6%	0.6	0.2%	N
Broadwell silt loam, 5 to 10 percent slopes, eroded (684C2)	17.4	3.0%	6.3	2.2%	N
Sable silty clay loam, 0 to 2 percent slopes (68A)	0.6	0.1%	0.0	0.0%	N
Sawmill silty clay loam, 0 to 2 percent slopes, occasionally flooded (8107A)	14.0	2.4%	4.1	1.4%	N
Sawmill silt loam, overwash, 0 to 2 percent slopes, occasionally flooded (8107A+)	0.3	0.0%	0.0	0.0%	N
Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded (8284A)	68.4	11.8%	11.7	4.1%	N
Tallula-Bold silt loams, 10 to 18 percent slopes, eroded (965D2)	0.0	0.0%	0.0	0.0%	N
Total	**579.7**	**100%**	**287.9**	**100%**	

Source: USDA NRCS 2022

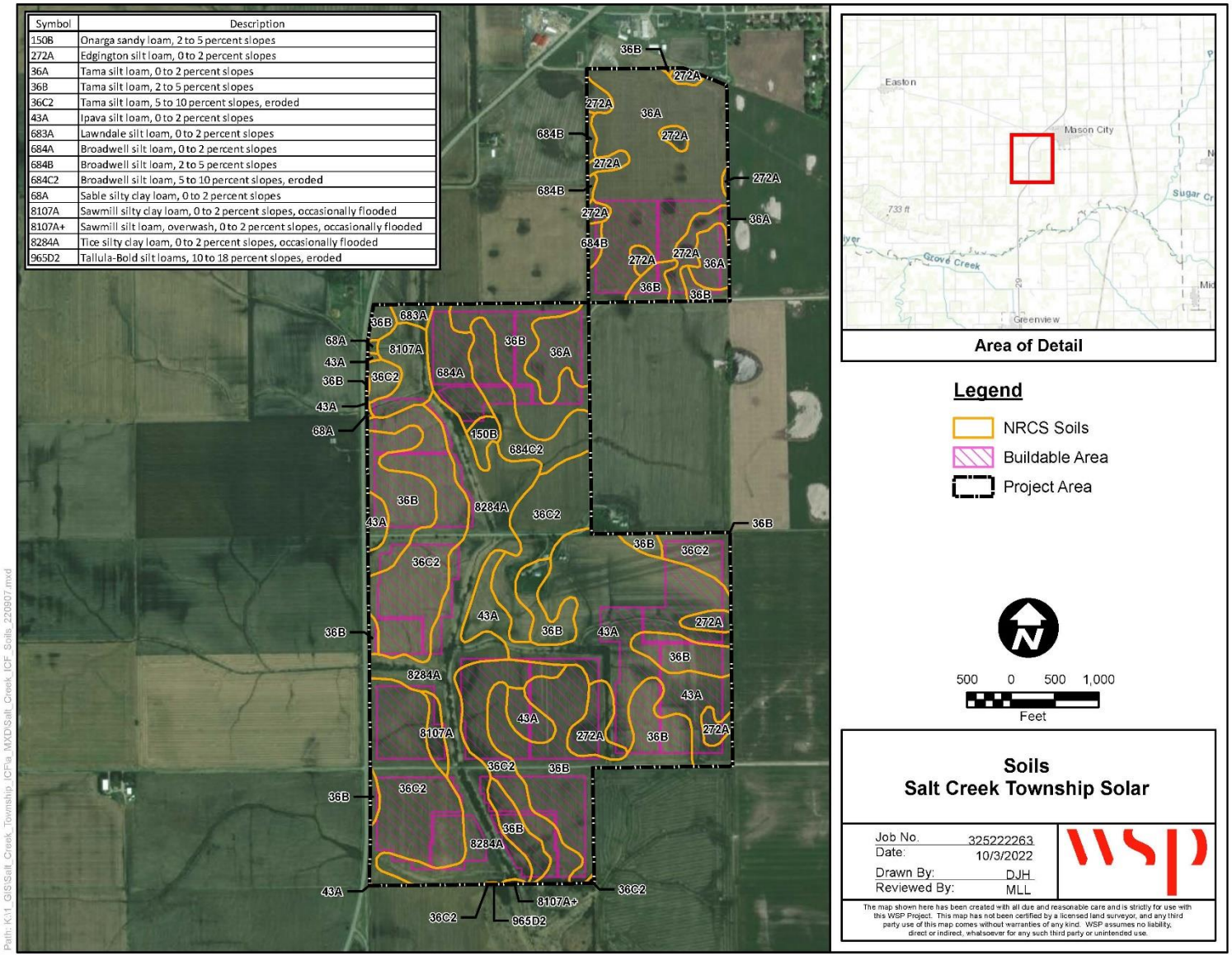

Figure 4. NRCS Mapped Soils within the Project Area

2.3 Biological Data on Illinois Chorus Frog

This Conservation Plan has been prepared in accordance with the Illinois Endangered Species Protection Act (520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080) in support of an ITA application to the IDNR. The purpose of this Conservation Plan is to review the proposed Project in sufficient detail to determine to what extent the proposed action may result in "incidental take" of the ICF, which is a state-threatened species in Illinois.

2.3.1 Field Survey

As described in Subsection 2.1, consultation with the IDNR in April 2021 indicated that the ICF may potentially occur in the vicinity of the Project Area. A desktop and field habitat assessment and weekly anuran call surveys were performed in 2022 for the Project Area. Because there were no documented breeding pond EOs at or near the Project Area, the intent of the surveys was to determine general presence/absence within the Project Area. Prior to the field investigation, several data sources were reviewed to identify areas of suitable habitat for the ICF. These data sources included:

- USGS 1:24,000 Scale Topographic Maps
- Recent and historic aerial photography
- NLCD (Dewitz 2019)
- NRCS soils data for Mason County, Illinois (Figure 4 and Appendix D)

Once authorization was received from the Applicant in early March, the anuran surveys were commenced and were conducted over the majority of the species' breeding season during suitable weather conditions (Appendix B). A WSP (formerly Wood) biologist conducted weekly anuran call surveys and visual site inspections of the proposed solar site for ten nights, approximately one night per week, from March 9th through May 9th, 2022, to detect the potential occurrence of the ICF. Surveys were conducted during ideal conditions for potential ICF call activity, which included temperatures no lower than 32°F with calm to light wind speeds. Anuran presence or absence was determined using call surveys (i.e., audible species-specific frog calls).

Seven survey locations were selected near the Project Area based upon presence of water features that could serve as ICF habitat (drainage ditches, channels, and associated low-lying areas) (see Appendix B for survey location information). Survey location 8 was added during the April 5th monitoring event, when an individual ICF was heard calling from a saturated region in an agricultural field along S. Keefer Street, between survey locations 1 and 7.

Of the ten total survey nights, ICF activity was detected on March 21st and April 5th at five of the eight survey locations. On March 21st, individual ICF calling was recorded at survey locations 1, 2 and 7. On April 5th, individual ICF calling was recorded at survey locations 3 and 8. Although individual ICFs were detected during the surveys, the exact locations from which they were calling are not known due to distance from the calls and presence of background traffic and industrial noise.

WSP digitized the boundaries of 11 depressions/ditches within the agricultural fields where ICF were potentially detected in the Project Area using geospatial data gathered in the field and aerial

imagery (Google Earth 2011, 2014, 2016, and 2018) to further refine the analysis. These depressions/ditches are shown as "potential breeding areas" on Figure 3. ICF were detected in the general direction of these depressions, and it has not been verified that these are used by ICF as breeding ponds.

2.3.2 Species Description

ICF is a small frog with a range restricted to sandy floodplain regions in western Illinois, southeast Missouri, and northeast Arkansas (Illinois Natural History Survey 2017). ICF is listed by the state as a threatened species in Illinois (IDNR 2015).

ICF is a secretive, fossorial species that emerges from underground burrows only during the breeding season. Adults are small, up to 1.8 inches snout-vent-length, and stout, with toad-like bodies and robust forearms. Adults have a distinguishing dark, mask-like stripe from snout to shoulder and a V- or Y-shaped mark between the eyes (Illinois Natural History Survey 2017).

2.3.2.1 Upland Life History

Between April to February, ICF live predominantly underground in sandy, loamy sand, or sandy loam loose soils conducive for burrowing (Illinois Natural History Survey 2017). Burrowing habitat predominates in areas with no or relatively sparse vegetation near ephemeral breeding pools. In laboratory and field environments, adult burrows have ranged from less than 1.0 inch up to 9.0 inches deep (Tucker et al. 1995).

While underground, ICF feed on invertebrates found in the soil. Prey species of ICF are likely most abundant close to the soil surface. Unlike other *Pseudacris* species, ICF are not freeze-tolerant and must burrow below the frost line to survive freezing temperatures in winter (Packard et al. 1998). ICF likely need to burrow between 5.0 inches and 10.0 inches below the surface to escape freezing (Brown et al. 1972).

2.3.2.2 Breeding

ICFs emerge from their sandy burrows for the breeding season following early spring rains where they travel to nearby shallow, isolated waters lacking predators, such as ephemeral ponds, flooded fields, and ditches, for reproduction. Larger bodies of water or streams with flowing water are not suitable for breeding (Brown and Rose 1988). The breeding season for this species in central Illinois is February through April, possibly extending through late May (Brown and Rose 1988; Hulin, Golden, and Bluett 2015). Tadpoles mature into their terrestrial form about two months following hatching and leave their natal wetlands to burrow in late May or early June (Tucker 2000).

2.3.2.3 Population Status

The largest threat to this species includes habitat loss and severe fragmentation from the draining of ephemeral wetlands and flooded fields for agricultural use or development (Illinois Natural History Survey 2017; Tucker et al. 2008; Trauth, Trauth, and Johnson 2006). Chemical runoff from agricultural practices into adjacent wetlands is also detrimental to the ICF (Illinois Natural History Survey 2017; IDNR 2009). Nonetheless, agricultural practices can be compatible with the wetland habitat requirements of the ICF if natural vegetation in and around wetland habitats is left

unmowed, and harmful runoff is minimized through a limitation of chemical use and/or maintaining a vegetated buffer around wetlands (IDNR 2009).

A review of the Illinois Natural Heritage Database determined no EOs of ICF breeding locations exist within 1 kilometer of the Project (Figure 2). According to the literature, ICF typically do not travel more than 1 kilometer between their aestivation and breeding sites (Tucker and Phillips 1995). ICFs require sandy soils for which to burrow, and they are believed to travel through agricultural lands to reach breeding sites (Tucker and Phillips 1995). Although there are no EOs within 1 kilometer, and there are minimal sandy soils within the Buildable Area (see Table 3 and Figure 4), WSP detected the presence of ICF in fields and/or ditches within and near the Project Area during the March-April 2022 field surveys (see Figure 3 and Appendix B).

2.4 Description of Project Activities

2.4.1 Activities with Potential for Incidental Take

Because the ICF has been confirmed to be present in flooded fields/ditches within and near the Project Area, construction of the proposed Project is likely to result in incidental take of this species. ICF may be most vulnerable to direct take between February to April, when adult frogs emerge from underground and congregate at breeding ponds. ICF may be at increased risk during this period due to their increased mobility and overland travel. Higher concentrations of ICF that occur at breeding ponds relative to upland habitat also may increase the population's susceptibility to negative impacts during this period if construction activities occur near occupied ponds between February and April. In addition, work near active breeding areas has the potential to change the pond's hydrology through siltation.

Ground disturbance associated with excavation, grading, and compaction of the soil has the potential to adversely impact ICF. However, there are only 0.05 acres of sandy soil mapped within the Buildable Area and, therefore, it is unlikely that the Project would result in direct take of ICF burrowed underground from April to February. Installation of solar arrays on agricultural lands that may support ICF breeding depressions and ditches will adversely affect potential ICF breeding habitat shown as potential breeding areas in Figure 3.

Construction activities are described in detail below.

2.4.2 Construction Sequence and Schedule

Construction activities and infrastructure may have the potential to alter the habitat for the ICF and to affect individuals of this species. Changes in habitat can result from both construction activity as well as seasonal timing. Construction activities will generally take place within the Buildable Area shown on Figure 3, with the majority of the work taking place from early spring through fall 2023 (Table 4).

Table 4. General Construction and Installation Sequence Schedule

Construction/Installation Action	Schedule*
Stormwater BMP installation	Early spring 2023

Construction/Installation Action	Schedule*
Point of interconnection grading	Spring 2023
Clearing and grading	Spring 2023
Road installation	Spring 2023
Racking installation	Summer 2023
Seeding/permanent stabilization	Fall 2023

*Current representation of Project schedule, plans subject to change.

2.4.3 Project Elements

The Project elements include those Project facilities previously described in Subsection 2.2 and would include PV solar panels mounted on a single-axis tracking system with a 60+/- degree tilt, along with the associated infrastructure of electric inverters and transformers, underground electrical collection system, electrical collector substation, overhead transmission line, point of interconnection switchyard, an O&M building, solar met stations, SCADA hardware, control house for protective relay panels and site controllers, private access roads with gated ingress/egress points, and security fencing and any associated facilities. Temporary facilities associated with construction will include construction laydown yards. The Project facilities and estimates provided are based on preliminary design and may change with final design. In all instances, Project facilities will be carefully sited to avoid delineated Waters of the U.S. and to avoid sandy soils, potentially suitable ICF breeding depressions and ditches, and forested areas to the greatest extent practicable.

Temporary laydown areas will be established within the Buildable Area, on the perimeters of the solar panel array development areas and away from potential ICF breeding areas, to ease offloading of supplies transported to the Project, store construction materials, reduce construction traffic by large transport vehicles, and stage Project tasks. The laydown areas will be constructed from a layer of gravel placed on top of existing site soils. The laydown areas will accommodate the storage of construction materials, employee parking, and temporary office space. Once construction of the Project is completed, facilities and the gravel will be removed, and the preconstruction soil conditions will be restored. The impacts to habitat from the laydown areas are temporary.

The Buildable Area includes setbacks of 50 feet from adjacent property lines; 500 feet from non-participating residential property lines; 55 feet from Waters of the U.S. (wetlands and streams); and an additional 30 feet to accommodate access roads, security fencing, and erosion control structures (Appendix E). The access roads will typically be designed to be 20 feet wide with a 20-foot-wide hammerhead turnaround at any dead ends. The roads will be constructed of nominal diameter stone and crushed stone placed approximately 12 inches thick. The access roads are required to afford access to the site for ongoing monitoring, maintenance, and emergency vehicular access and are intended to remain for the duration of the solar farm's useful life. Delineated wetlands and streams, sandy soils, and potential breeding areas shown on Figure 3 will be avoided during construction of the access roads. As such, there would be no project-lifetime or permanent impacts to ICF upland or breeding habitat resulting from placement of the

access roads. Construction and operation of vehicles on access roads would result in temporary and long-term impacts to potential overland travel habitat for ICFs.

PV solar panels mounted in single-axis tracking systems will be installed on most of the 290-acre Buildable Area. The tracking system is designed to adjust PV module angles throughout the day to track the sunlight from sunrise to sunset. As a result, the height of the panels above grade can vary from 3 to 9 feet. The spacing between module rows is anticipated to be between 20 to 25 feet on average. Areas beneath the panels that are disturbed by construction activities will be planted with seed mixes selected to include native short grass prairie species and short forb species requiring minimal disturbance from maintenance. The same seed mix will be planted on disturbed areas between the rows to reduce the impact from shading of the panels from vegetation. Salt Creek Township Solar, LLC will work with local suppliers to find the most suitable seed mix design for the Project that includes wildflowers for pollinators. Native seed mixes will be used in ICF potential habitat areas and to restore open areas and wet meadow areas within the Buildable Area. The seed mix designs are included in Appendix G.

The approximately 129,246 PV panel modules, which will be elevated above the ground and supported by the tracking system, are considered to have neither permanent nor temporary impacts on the habitat. In comparison to active row crop agriculture, solar farming will allow for the establishment of a more favorable plant community for the ICF.

The tracking systems are supported by support piles that range from 6 inches by 9 inches to 6 inches by 15 inches of galvanized steel "W" section beams, installed up to 10 feet below ground level. The piles are installed by a pile-driven method. Some piles may need to be installed within the potential breeding areas shown on Figure 3. This would result in temporary and project-lifetime adverse impacts to potential ICF breeding habitat.

Other infrastructure associated with the Project includes 16, 3.6-MW electric inverters and transformers. These components are used for the conversion of the PV-generated DC to AC compatible with the utility grid. The inverters and transformers utilized for the Project will be placed on concrete pads, one within each of 16 blocks of arrays that are shown on the construction plans in Appendix E. The pads are each approximately 160 square feet and would be considered permanent structures for the duration of the solar farm's useful life. Delineated wetlands and streams, sandy soils, and potential breeding areas shown on Figure 3 will be avoided during construction of the concrete pads. As such, there would be no project-lifetime or permanent impacts to ICF upland or breeding habitat resulting from placement of the pads. Disturbance from concrete pad construction would be temporary impacts to potential overland travel habitat for ICFs.

A combination of an aboveground and an underground electrical collection system will connect the PV modules to the inverters and transformers. The electrical wiring is buried more than 4 feet below ground and installed in an approved conduit. The final conduit sizing will be determined with the final construction plans set. During installation, the electrical conduit/direct-buried cables will be placed underground via directional boring or trenching. No open trenching of the conduit will be conducted in sandy soils. Disturbance from conduit installations are temporary impacts to potential overland travel habitat for ICFs.

A Project collector substation, short overhead transmission line, and a point of interconnection switchyard will be constructed to connect the power generated from the Project to the electric grid for distribution. The collector substation will be placed on a gravel subbase with concrete

equipment pads for the duration of the solar farm's useful life. The point of interconnection switchyard would be constructed similarly on a graded gravel subbase with concrete drilled piers and mat foundations that are considered permanent structures beyond the duration of the solar farm's useful life. However, there are no sandy soils, delineated wetlands, or potential breeding areas within the area of substation construction. As such, there would be no permanent impacts to ICF resulting from placement of the substation and switchyard.

Security fences will be constructed around the perimeter of the solar farm with gated ingress and egress at each access road (Appendix E). The fence will be 8-feet-tall maximum height made of a minimum 6-foot-tall chain link fabric. As shown in Appendix E, fencing will be configured to allow small animal passage via graduated vertical spacing and ground clearance; thus, the fence wire will have minimal impact on habitat. The fence posts and foundations would be considered permanent structures for the duration of the solar farm's useful life. Fence posts are 2.375 inches in diameter and will be driven to a 36- to 48-inch depth approximately 10 feet apart. Terminal posts will be set in a 1 square foot by 4-foot-deep concrete footing.

Potential additional Project facilities could include an O&M building, solar met stations, SCADA hardware, and control house for protective relay panels and site controllers. These facilities could have similar impacts to those listed above with site grading, gravel, or concrete pads and be considered potential impacts to habitat for the duration of the solar farm's useful life. However, there are no delineated wetlands within the Buildable Area, and Project facilities will be carefully sited to avoid the minimal sandy soils onsite and the potential ICF breeding areas shown on Figure 3 to the greatest extent practicable.

Decommissioning is the approximate mirror image of the construction process. Details of the process are outlined below.

2.4.4 Decommissioning

Commercial-scale solar facilities are designed to operate for approximately 30 years. For the purpose of this Conservation Plan, upon expiration of the operational life of the Project, the Project Facilities will be removed, and the Project property will be restored pursuant to the Mason County approved Conditional Use Permit, including any conditions of approval, additional applicable requirements in the Mason County Zoning Ordinance, and the executed Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture (Appendix F).

The Project acknowledges that all solar components including Project facilities as defined, constructed above ground, and any structures at a minimum of 4 feet below-grade will be removed offsite for disposal, except for (i) access roads or driveways on private property if the property owner requests in writing to the Project for such to remain and (ii) switchyard, interconnection facilities and other similar utility facilities not owned by the Project at the time of decommissioning.

The Project anticipates decommissioning will occur over a six-month period and will coordinate with the County and others pursuant to the AIMA prior to the start of any decommissioning activities. Once decommissioning is completed the restoration process will begin on site. The restoration will occur over a maximum of a six-month period with all decommissioning and restoration completed within a one-year period. Prior to decommissioning, the Applicant will initiate another consultation with the IDNR to satisfy the requirements of Title 17, Chapter I (c),

Section 1075 of the Illinois Administrative Code (Consultation Procedures for Assessing Impacts of Agency Actions on Endangered and Threatened Species and Natural Areas).

The anticipated sequence of decommissioning and removal is described below; however, an overlap of activities is expected.

- Prepare the site for component removal
- Install temporary fencing (erosion control silt fencing) and BMPs to protect sensitive resources
- De-energize solar arrays, if not already de-energized
- Dismantle panels and racking
- Remove the frame and internal components
- Remove and preserve topsoil on-site for reuse once all subsoil disruption is complete, per the AIMA
- Remove portions of structural foundations to a minimum of four (4) feet below the surface and backfill sites
- Remove inverters and transformers
- Remove electrical cables and conduits to a minimum of four (4) feet below the surface
- Repair all tile lines, per the AIMA
- Remove access and internal roads and grade site
- De-compact subsoils from equipment usage, soils will be ripped to a depth of 18 inches, to the extent practicable, per the AIMA
- Remove rocks from the surface which emerged during deconstruction, per the AIMA
- Replace topsoil (if required), restore, and revegetate (if desired by the landowner at the time of decommissioning) disturbed land to pre-construction conditions to the extent practicable.

2.4.5 Permitting Reviews

The Applicant will comply with all Federal, state, and local regulations. No other environmental permitting reviews are required for the Project (e.g., U.S. Fish and Wildlife Service biological opinion or USACE Section 404 review) as no other sensitive resources are impacted by the Project.

2.4.6 Potential Adverse Impacts on the ICF

The purpose and need for the Project is to develop clean renewable energy sources within the state of Illinois and get the state closer to its statutory requirements, established recently through SB2408, to reach 100 percent by 2050. The no-action alternative for the Project would be to not construct the 50-MWac ground-mounted utility-scale solar project at the Project Area. A decision

not to construct the Project reduces the availability of clean, renewable power in Illinois for the state to reach its renewable portfolio standard.

For the purposes of this report the term “temporary impacts” will be used to identify short-term impacts to potential habitat areas during Project construction. “Project-lifetime loss” will identify impacts that last until the Project is decommissioned, and “permanent loss” will identify impacts that will last beyond the life of the Project.

2.4.6.1 Breeding Habitat

Although documented breeding pond EOs provided by IDNR do not occur within 1 kilometer of the Project, ICF were potentially detected within and adjacent to the Buildable Area within agricultural fields and ditches during March-April 2022 ICF field surveys, as described in Subsection 2.3.1. A maximum of approximately 2.6 acres of potential ICF breeding habitat (i.e., “potential breeding areas”) within seasonally flooded agricultural fields and ditches in the Buildable Area shown on Figure 3 would likely be affected for the lifetime of the project.

Project activities would include approximately 575 linear feet of security chain link fencing installed over potential breeding areas. Fence posts are 2.375 inches in diameter (approximately 5.6 square inches) every 10 feet, which would total approximately 2.2 square feet of impact in potential breeding areas. Approximately 145 linear feet of access road and underground conduit construction may affect the southern edges of two potential breeding areas, as shown in Figure 3.

The agricultural fields within the Buildable Area have been frequently disced by a tenant farmer in recent years. Although solar tracking systems and panels and security fencing would be erected within and/or over potential breeding areas (field depressions), no grading is expected, and Project-lifetime impacts would be minimal as compared to current cultivation activities. The maximum area of impact in potential breeding areas is 2.6 acres, but impact areas would likely be much less.

2.4.6.2 Upland Habitat

The IDNR considers potential upland habitat for ICF to be suitable sandy soils within 0.6 miles (0.9 kilometers) of documented breeding ponds. Although a small area of sandy soil is mapped in the Project Area (Figures 3 and 4), documented breeding pond EOs supplied by the IDNR do not include any locations within 1 kilometer of the Project Area (Figure 2). This area of sandy soil does fall within 1 kilometer of potential breeding areas mapped from March-April 2022 field survey results. The Project Buildable Area has been designed to avoid this area of sandy soil to the extent practicable. However, a minimal portion (0.05 acres) of this area may be impacted by development of approximately 178 linear feet of security fence (Appendix E), which would potentially introduce temporary construction impacts and minor Project-lifetime impacts. Fence posts are approximately 5.6 square inches every 10 feet, and a corner concrete footing would be 1 square foot, which would total approximately 1.7 square feet of impact in mapped sandy soils. No access roads, inverters, or arrays are planned in the mapped sandy soil area.

2.4.6.3 Overland Travel Habitat

Although the impacts of the Project on upland sandy soils used by ICF would be minimal, the Buildable Area may be utilized by migrating, dispersing, or wandering individuals of the species. Temporary Project activities include vehicle travel, construction of temporary roads, temporary

trenches, fence post installation, solar panel support beam installation, and vegetation maintenance and restoration. Temporary impact activities could result in direct mortality via crushing individual ICFs. There may also be temporary adverse impacts to the habitat that this species utilizes due to grading.

After construction is complete, Project-lifetime loss activities, such as occasional vehicle entries and vegetation management will be necessary until the Project reaches its end of useful life and is decommissioned in approximately 30 years. The long-term Project-lifetime loss activities could also result in direct mortality via crushing individual ICFs. Additionally, the position of infrastructure will prevent the usage of certain areas by wildlife. Areas that will become inaccessible and/or will be converted to non-supportive habitat for the Project-lifetime include concrete or stone inverter pads, fence posts, and panel support beams.

WSP established a 1-kilometer buffer around potential breeding areas and overlaid the proposed Project Buildable Area to determine the acreage of potential impacts to potential overland travel habitat (Figure 5). Approximately 254.5 acres within the Buildable Area falls within 1 kilometer of potential breeding areas and may be used by ICF for overland travel during the breeding season. Most of the overland travel impacts to this area would be temporary and the habitat would be restored to previous or improved habitat conditions after the completion of construction.

In summary, the proposed Project Area is not within 1 kilometer of IDNR documented ICF EOs. The Project was sited to avoid permanent loss or project-lifetime impacts to wetlands and sandy soil areas to the extent practicable. Potential permanent and project-lifetime impacts from the proposed Project are summarized in Table 5 below.

Table 5. Summary of Project-Lifetime and Permanent Maximum Impacts to ICF

Impact Type	Activities/Infrastructure	Maximum Estimated Project-Lifetime Loss (acres)	Estimated Permanent Loss (acres)
Potential ICF breeding areas	Placement of solar arrays, including support beams, security fence posts, and access road	2.6	0.0
Upland ICF habitat (sandy soil)	Placement of security fence posts	0.05	0.0
Total Acreage		2.65	0.0

2.4.6.4 Direct Take

Because there are only 0.05 acres of sandy soil mapped within the Buildable Area (USDA NRCS 2022), and this area is not within 1 kilometer of IDNR-documented ICF EOs, ground-disturbing activities associated with Project construction are not likely to result in direct take of ICF while in upland habitats. However, as discussed in Subsection 2.4.6, ICF may be at highest risk of impacts during the breeding season when ICF are above ground within and adjacent to potential breeding areas and dispersing through a variety of habitats to reach breeding ponds/depressions. Due to

minimal sandy soils in the Buildable Area, WSP conservatively estimates temporary construction activities associated with the Project may result in take of up to 2.6 acres of potential breeding habitat, 0.05 acres of potential upland habitat, and between one and 50 ICF during the breeding season. Although impacts to ICF are not expected during the non-breeding season, Salt Creek Township Solar, LLC is committed to implementing the measures laid out in Section 3.0 to minimize impacts and the potential for direct take of ICF during both the breeding and non-breeding seasons.

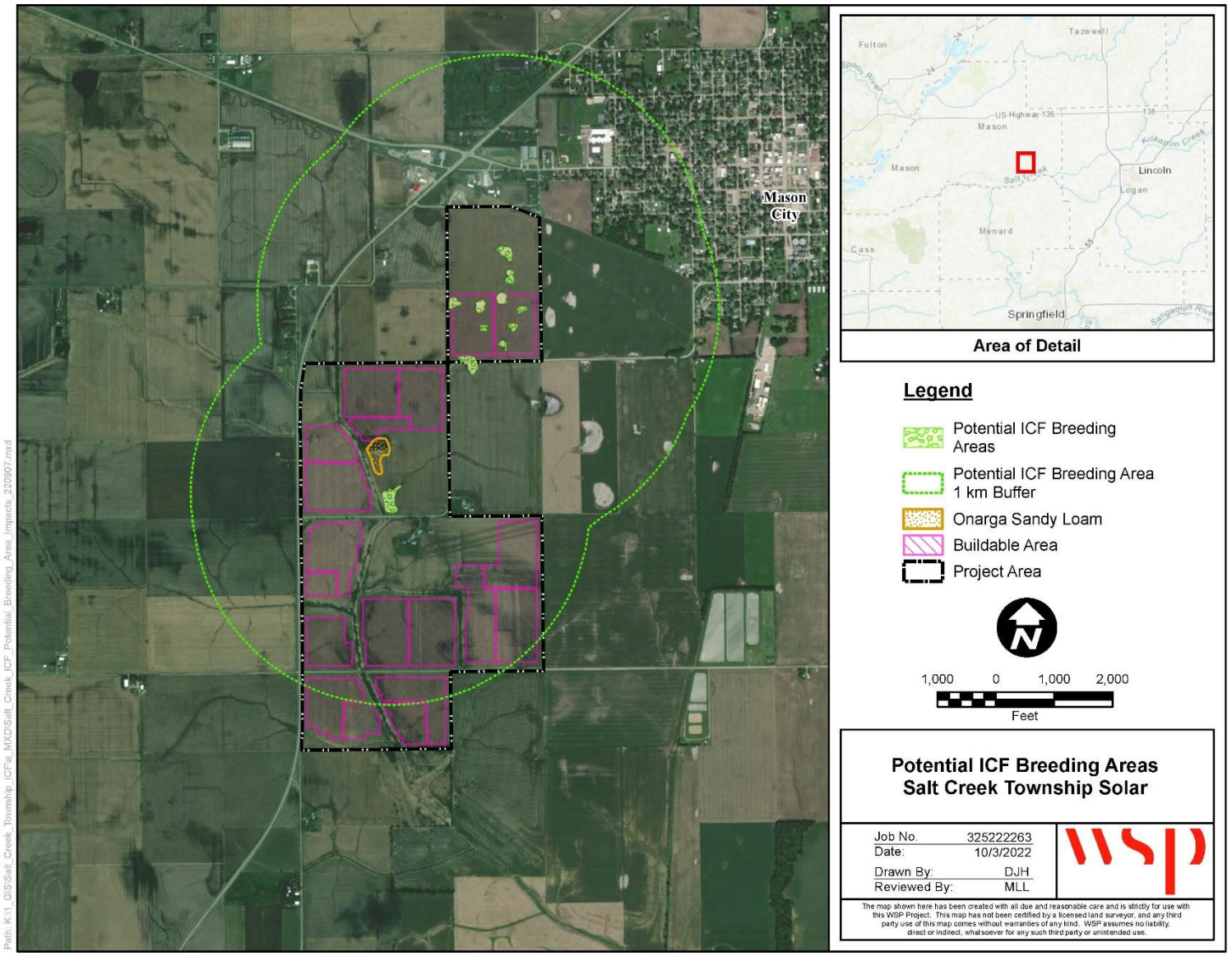

Figure 5. Buildable Area and Mapped Sandy Soil within 1 Kilometer of Potential Breeding Areas

3. EFFORTS TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

Project impacts pertain to the potential for direct mortality and habitat alteration during construction activities. The following practices will be implemented to avoid, minimize, and mitigate temporary impacts to the ICF:

- The Project was designed to avoid impacts to wetlands. Wetlands play a critical role in the lifecycles of many species, such as ICF. There will be no reduction in acres of delineated wetlands due to the Project.
- Approximately 0.05 acres of sandy soils are mapped within the Buildable Area (USDA NRCS 2022). If sandy soils are encountered during construction, Project features will be sited to avoid areas of sandy soil to the extent practicable.
- Construction personnel will receive environmental training prior to Project construction and will focus on the identification, lifecycles, vulnerabilities, and reporting procedures with respect to the ICF.
- Temporary exclusion fencing will be built around the Project substation and around wetlands and other standing water areas that are not part of the construction Buildable Area. It will be removed upon completion of Project construction activities.
- Project construction and BMPs will adhere to Soil Erosion and Sedimentation Control (SESC) permit requirements.
- To reduce risk to ICF, daily construction work hours in February, March, and April will stop prior to sunset to avoid the time of day when ICF are most active.
- Trenches will be refilled within 12 hours of excavation. Trenches that are open for more than 12 hours, or that have been left open overnight, will be inspected for animal presence before refilling. Animals found will be released prior to trench filling.
- Although not expected, in areas of grading and excavation in sandy soils, topsoil will be removed from the area and set aside for replacement upon completion of disturbance.
- A biological inspector/monitor will be present daily during ICF breeding time (February to April), and weekly throughout the remainder of construction. If large congregations of ICF are observed the IDNR will be notified.
- Areas impacted by construction will be reseeded both inside and outside the fenced area. Native and non-native short grass prairie species and short forb species will be planted in the potential ICF breeding areas shown on Figure 2-3 and surrounding areas (within Blocks 1-4 shown in Appendix E. Areas beneath and around the solar arrays in other areas will be seeded with a low-growing, shade-tolerant, perennial seed mix specifically compiled for use under the arrays as the permanent ground cover. This mix may be comprised of native warm and cool-season grasses that do not typically exceed a height of one (1) foot, thus eliminating concerns for panel shading and reducing mowing frequency; native species will be used as practicable. Seed mix designs are included in Appendix G.

Because the amount of mapped sandy soils within the Buildable Area is minimal, long-term impacts pertain mainly to overland travel habitat loss resulting from the Project design, loss of potential breeding pond areas where array support beams are placed, and to a lesser degree the limited potential for direct mortality during Project operations and maintenance. The following practices will be implemented to avoid, minimize, and mitigate long-term impacts to the ICF:

- Security fencing will have graduated vertical spacing and ground clearance that allows small animal passage. This may be accomplished via openings, or via a raised fence bottom. Drawings of security fencing are included in Appendix E.
- Lighting density, intensity, coloration, and direction will be carefully reviewed to avoid interference with wildlife.
- Once vegetation is established in the Project Area (anticipated to occur within three years following construction), there will be no more than two annual mowings between the dates of April 15 to October 20.
- Mower blades will be set no lower than 6 inches if such mowings do occur. Any mowing between April 15 and October 20 will occur after sunrise and before sunset.
- There will be no broadcast herbicide spray. However, herbicides may be utilized in a targeted manner in order to reduce invasive species or kill vegetation that threatens the Project infrastructure (e.g., woody plants growing within the solar arrays).
- State and/or federal threatened and endangered species observations made at the Project site or during visits to the Project site will be reported to IDNR within 48 hours.
- Annual call surveys for ICF targeting all ponds within 0.3 miles of construction (i.e., where landowner permission is granted, and/or where ponds are within 100 feet of public roads) for two of the five years post-construction. If rainfall is substantially lower than average, Salt Creek Township Solar, LLC will confer with IDNR about postponing surveys to a year with better conditions.

Based on information provided by IDNR Realty Division, the mean land value for similar lands in Mason County is $7,693/acre. Project-lifetime loss of habitat would last only until the Project is decommissioned. To offset the Project-lifetime potential alteration of a maximum of 2.6 acres of potential breeding habitat and 0.05 acres of sandy soils shown in Figure 3 and the mostly temporary impacts to overland travel habitat, the Project will commit to $20,386 of monetary mitigation (see Table 6). The Project also will plant over 70 acres (25 percent of the Buildable Area) in native grass and forb species on areas disturbed by construction between and under the solar arrays, effectively replacing existing agricultural cropland with habitat that is more beneficial to the ICF as well as non-target species.

Table 6. Summary of Proposed Mitigation

Species	Maximum Project-lifetime Potential Habitat Alteration	Array Grassland Plantings to Replace Agricultural Cropland	Mean Land Value in Mason County	Monetary Mitigation
Illinois chorus frog (*Pseudacris illinoensis*)	Approximately 2.65 acres	Over 70 acres (25% of Buildable Area)	$7,693 per acre	$20,386

4. ADAPTIVE MANAGEMENT PRACTICES

A primary objective of this Conservation Plan is to minimize adverse impacts to the ICF and provide a net benefit to this species. Adaptive management is a willingness to observe Project results and modify behaviors and activities to improve outcomes. The following practices will be implemented to ensure that the Project utilizes adaptive management:

- The construction and the environmental team will routinely monitor the implementation and effectiveness of the avoidance, minimization, and mitigation measures within this document in protecting the state-threatened ICF.
- If changed or unforeseen circumstances arise that reduce the effectiveness of the minimization measures described in this Conservation Plan, Salt Creek Township Solar, LLC will coordinate with the IDNR to determine if additional measures are warranted.

5. CASCADING EFFECTS

Currently, nearly the entire Project site is utilized to grow annual crops such as corn, soybeans, and sorghum. Annual monoculture crop systems are often subject to frequent tillage, which is detrimental to fossorial species and tends to diminish water quality. These monoculture crop systems also usually require high inputs of fertilizer, minerals, herbicides, insecticides, and fungicides. As such, modern monoculture crop fields are devoid of forage and structural diversity; and in tandem with the diminished water quality, they provide poor habitat for wildlife.

An unintended potential benefit of the location of the solar facility is its close proximity to ICF populations. These populations are likely stressed, and fitness is reduced by the intensive agriculture that occurs currently within the Project Area. Returning this area to a low disturbance regime while restoring critical habitats, such as grassland plantings adjacent to potential breeding areas, may provide a net benefit to the species.

The targeted vegetation to be planted on areas disturbed by construction of the Project will be chosen to provide ground cover, structural diversity, a range of blooming dates and pollinator resources, and perennial root/soil structure. Given that the majority of the Buildable Area will become a habitat patch occupying approximately 290 acres, the restoration of this area to a more natural state should benefit a variety of non-target species such as birds, reptiles and amphibians, small mammal species, and hundreds of insect species. Any negative effects as a result of Project

construction and operation would likely be offset by the benefits to these species by removing these acres from cultivation over the medium to long term.

6. CONSERVATION PLAN FUNDING

The Project has adequate financial backing to support and implement all mitigation activities described in this Conservation Plan. The costs of mitigation activities will be incorporated into the overall Project budget. Therefore, no specific financial instruments such as bonds, certificates of insurance, or escrow accounts will be required to implement all aspects of the Conservation Plan.

7. PROJECT ALTERNATIVES

7.1 No Action Alternative

The purpose and need for the Project are to develop clean renewable energy sources within the state of Illinois and get the state closer to its statutory requirements, established recently through SB2408, to reach 100 percent by 2050. The no-action alternative for the Project would be to not construct the 50-MWac ground-mounted utility-scale solar project at the Project site. A decision not to construct the Project reduces the availability of clean, renewable power in the state to reach the statewide renewable portfolio standard.

In addition, a no-action alternative would result in no change in habitat conditions for ICF. Existing agricultural conditions at the Project Area may provide poor habitat for this species.

7.2 Relocate Within the Project

The Project Area and surrounding properties are dominated by a monoculture of crop fields. Shifting the Project in any direction would place the Project impacts on similar monoculture crop fields with scattered wetlands, ponds, streams, and ditches and would not result in a significantly different Project outcome than the design being proposed. The current Project design has been developed to minimize impacts to natural resources. Relocation of Project facilities within the Project Area boundary is unlikely to minimize Project impacts and may result in greater impacts to wetlands and streams.

7.3 Current Project Design

The current Project design provides a source of renewable energy to comply with the state's Future Energy Jobs Act, while improving local prospects for ICF. While the Project design (Buildable Area) is subject to change within the selected Project Area, as shown in Figure 3, the proposed configuration has been sited to avoid:

- Wetlands and waterways
- IDNR documented ICF breeding areas
- The majority of sandy soil area, located in the west central portion of the Project Area

- The majority of forested areas, located in the west central portion of the Project Area and along waterways.

8. IMPLEMENTING AGREEMENT

8.1 Signatories

The following individuals are responsible for the execution of this Conservation Plan.

DocuSigned by:
Chris Norqual
902002CA113E41B...

1/30/2023

Chris Norqual — Date

Authorized Representative

Salt Creek Township Solar, LLC

8.2 Responsibilities and Schedules

Salt Creek Township Solar Project, LLC is the developer and will be the long-term owner/operator of the Project. The Applicant, successor, or an assign of the Applicant has the responsibility to acquire all necessary permits for construction and operation of the Project, including the ITA. The Applicant will have the responsibility of complying with the terms of the ITA during both construction and operation of the solar facility.

The Applicant will serve as the Conservation Plan Coordinator and will be responsible for the implementation of the BMPs, mitigation measures, and restoration activities as described in this Conservation Plan. Allison White will be the IDNR liaison and inform IDNR of adaptive management measures necessary to comply with the Conservation Plan. Contact information for the Conservation Plan Coordinator is as follows:

Allison White

Salt Creek Township Solar Project, LLC

Address: 2650 Locust St, Suite 100, St. Louis, MO 63103

Email: Allison.White@prim.com

Phone: 720-668-5848

A post-construction monitoring report will be provided to the IDNR upon completion of construction activities. The report would include a description of when the Project activities were completed, BMPs that were implemented, pre-and post-construction photographs of habitat areas, an inventory of any ICF individuals observed during construction activities, and any additional measures taken to further reduce potential impacts to this species.

In-field Project construction activities are anticipated to begin at this site in February 2023 and be completed by November 2023.

8.3 Certification

I hereby certify that the participant listed in Section 8.1 has the legal authority to carry out their respective obligations and responsibilities under the Conservation Plan.

DocuSigned by:
Chris Norqual
902002CA113E41B...

1/30/2023

Chris Norqual — Date

Signatory of Salt Creek Township Solar Project, LLC

8.4 Compliance with Federal, State, and Local Regulations

The Applicant will comply with all pertinent Federal, State, and local regulations that govern the proposed Project and will provide copies of authorizations that could affect the terms and conditions of any ITA issued by the IDNR for this Project

9. REFERENCES

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Appendix A

IDNR Correspondence

January 2023

Appendix B

Illinois Chorus Frog Monitoring Report

January 2023

Appendix C

Wetland Delineation and Jurisdictional Determination

January 2023

Appendix D

Soil Report

January 2023

Appendix E

Construction Plans

January 2023

Appendix F

Land Ownership or Control

January 2023

Appendix G

Seed List

January 2023

Appendix A

IDNR Correspondence

Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

JB Pritzker, Governor
Colleen Callahan, Director

4 April 2021

David Bunge
President
Azimuth Renewables
34 N. Brentwood Blvd
Ste. 209
St. Louis, MO 63105

RE: Salt Creek Township Solar
Consultation Program
EcoCAT Review #2112025
Mason County

Dear Mr. Bunge:
The Department has received your submission of this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], *Title 17 Illinois Administrative Code* Part 1075. Additionally, the Department may offer advice and recommendations for species covered under the *Fish & Aquatic Life Code* [515 ILCS 5, *et seq.*]; the *Illinois Wildlife Code* [520 ILCS 5, *et seq.*]; and the *Herptiles-Herps Act* [510 ILCS 69].

The proposed action being reviewed in this letter consists of the construction of a 50 MWac utility-scale solar project south of Mason City, Illinois (≈ 40.184°, -89.721°).

The natural resource review provided by EcoCAT indicated that the state-listed Illinois chorus frog (*Pseudacris illinoensis*) may be in the vicinity of the proposed action. Based on the cryptic nature of this frog, the known occurrences of Illinois chorus frog surrounding the project area, the scope and scale of work required, and habitat in the project area being consistent with surrounding habitat in which this frog has been identified; the Department recommends the applicant seek an Incidental Take Authorization (ITA) pursuant to Part 1080 and Section 5.5 of the *Illinois Endangered Species Protection Act*. Be advised, an ITA can take at least four months to obtain and requires a public notice period. All questions pertaining to ITA should be directed to the ITA coordinator, Heather Osborn (Heather.Osborn@Illinois.gov). Visit the link below for information on the ITA process:

https://www.dnr.illinois.gov/conservation/NaturalHeritage/Pages/ApplyingforanIncidentalTakeAuthorization.aspx.

Consultation on the part of the Department is closed, unless the applicant desires additional information or advice related to this proposal. Consultation for Part 1075 is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If

the action has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal and should not be regarded as a final statement on the project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

The Department also offers the following conservation measures to help protect native wildlife and enhance natural areas in the project area:

If temporary or permanent lighting is required, the Department recommends the following lighting recommendation to minimize adverse effects to wildlife:

- All lighting should be fully shielded fixtures that emit no light upward.
- Only "warm-white" or filtered LEDs (CCT < 3,000 K; S/P ratio < 1.2) should be used to minimize blue emission.
- Only light the exact space with the amount (lumens) needed to meet highway safety requirements.
- If LEDs are to be used, avoid the temptation to over-light based on the higher luminous efficiency of LEDs.

If erosion control blanket is to be used, the Department also recommends that wildlife-friendly plastic-free blanket be used around wetlands and adjacent to natural areas, if not feasible to implement project wide, to prevent the entanglement of native wildlife.

The Department also recommends that all disturbed areas be reseeded with an appropriate native seed mix that contains forbs as well as grasses, where feasible.

Please contact me with any questions about this review.
Sincerely,

Bradley Hayes
Resource Planner
Office of Realty & Capital Planning
Illinois Dept. of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271
Bradley.Hayes@Illinois.gov
Phone: (217) 782-0031

cc. Heather Osborn - Incidental Take Authorization Coordinator
Paul Kelley - Project Manager, Azimuth Renewables

Porath, Rebecca

From: Porath, Rebecca
Sent: Thursday, June 9, 2022 12:28 PM
To: bradley.hayes@illinois.gov
Cc: Osborn, Heather; Miller, Stephanie J
Subject: Salt Creek Township Solar project - need for an ITA
Attachments: ICF_Survey Locations_220602.pdf; 2022 Salt Creek Township Anuran Survey Summary_06012022.docx

Categories: Red Category

Dear Mr. Hayes,

On April 4, 2021, Azimuth Renewables received an EcoCat Review (#2112025) (attached) from your office for the Salt Creek Township Solar Site project. The project includes of the construction of a 50 MWac utility-scale solar project south of Mason City in Mason County, Illinois (≈ 40.184°, -89.721°).
The natural resource review provided by EcoCAT indicated that the state-listed Illinois chorus frog (ICF) (*Pseudacris illinoensis*) may be in the vicinity of the proposed action, and the Illinois Department of Natural Resources recommended the applicant seek an Incidental Take Authorization (ITA) pursuant to Part 1080 and Section 5.5 of the Illinois Endangered Species Protection Act. In response to this, Wood Environment and Infrastructure, Inc (Wood) was retained by Birch Creek Development, the owner of the site, to perform presence/potential absence survey for ICF at this site.

Wood conducted the weekly anuran call surveys between March 14 and May 9, 2022 at the proposed project location one night per week during the active breeding season to detect presence or potential absence of ICFs. The surveys were conducted when ideal weather and climatic conditions were present for the frogs to be active. A summary of the survey results and a figure showing the associated survey locations are attached to this email.
Individual ICF calls were detected at locations 1, 2, and 7 on March 21 and at locations 3 and 8 on April 5.

Wood is contacting your office to provide the 2022 Salt Creek Township Solar Site ICF survey results and to request additional guidance considering these results. Please let us know if Azimuth Renewables should proceed with an ITA based on this new information.

Thank you,
Rebecca Porath

Rebecca Porath
Senior Environmental Scientist
Mobile: +1 (573) 256-9891
www.woodplc.com

Porath, Rebecca

From: Osborn, Heather <Heather.Osborn@Illinois.gov>
Sent: Tuesday, June 28, 2022 2:31 PM
To: Porath, Rebecca
Cc: Miller, Stephanie J; Lehmann, Michael
Subject: RE: Salt Creek Township Solar project - EcoCat Review (#2112025)

Hi Rebecca,

I'm glad to see you have the dataset for the breeding pond locations. I hope that helps with Construction Plan development.

I have also heard back from our Realty Division for land values in the area you provided. The median land value is $7,698/acre, and the mean land value is $7,693/acre. This covers a wide range of 16 properties, mostly ag lands, with mean of 89 acres (median of 75 acres). Let me know if you wish to use either the median, mean, or to round to the next 100 dollars for $7,700/acre.

Heather

Heather Osborn
Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702

Cell: (217)720-8910
Desk phone: (217)782-2456
ITA: (217)557-8243

From: Porath, Rebecca <rebecca.porath@woodplc.com>
Sent: Friday, June 24, 2022 10:47 AM
To: Osborn, Heather <Heather.Osborn@Illinois.gov>; Hayes, Bradley <Bradley.Hayes@illinois.gov>
Cc: Miller, Stephanie J <stephanie.miller3@woodplc.com>; Lehmann, Michael <michael.lehmann@woodplc.com>
Subject: [External] RE: Salt Creek Township Solar project - EcoCat Review (#2112025)

Thank you, Heather!

1) To further clarify our request for IDNR Illinois chorus frog (ICF) breeding pond locations, I have attached a map of a figure from the Glacier Sands ICF Conservation Plan that we were looking at as an example. The figure shows IDNR ICF records, and we would like to use this information in our conservation plan, if possible.

2) Here is the legal description for the Salt Creek Township Solar Site in Mason County:

W ½ of the SW of section 7 township 20 range 5, N ½ of the NE and the S ½ of the NE of section 24 township 20 range 6, NE and the SE of section 13, township 20 range 6, W ½ of the SW of section 18 township 20 range 5 and the SW of the SE of section 12 township 20 range 6
(SN 07 20N 5W, SN 12 20N 6W, SN 13 20N 6W, SN 18 20N 5W, SN 24 20N 6W)

Please let me know if you need any further information for these requests!

Thanks again,
Rebecca

Rebecca Porath
Senior Environmental Scientist
Mobile: +1 (573) 256-9891
www.woodplc.com

From: Osborn, Heather <Heather.Osborn@Illinois.gov>
Sent: Friday, June 24, 2022 8:52 AM
To: Porath, Rebecca <rebecca.porath@woodplc.com>; Hayes, Bradley <Bradley.Hayes@illinois.gov>
Cc: Miller, Stephanie J <stephanie.miller3@woodplc.com>; Lehmann, Michael <michael.lehmann@woodplc.com>
Subject: RE: Salt Creek Township Solar project - EcoCat Review (#2112025)

Hi Rebecca,

These are questions I can work on getting to the right people to get you an answer.

1) I'm checking with our Natural Heritage database manager to see if she can get you this data, with a data use agreement/license. It might be in a coarse form of to the section, depending on how past data was collected, and might require wetland surveys/mapping.
2) I can check with the realty division for the current per acre land valuation, but can you give me a few more details to help them? They will ask me for Township, Range, and Section information for the area(s). I might be able to get that from the KMZ, but if you have it handy, I would appreciate that.

Heather

Heather Osborn
Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702

Cell: (217)720-8910
Desk phone: (217)782-2456
ITA: (217)557-8243

From: Porath, Rebecca <rebecca.porath@woodplc.com>
Sent: Thursday, June 23, 2022 4:24 PM
To: Osborn, Heather <Heather.Osborn@Illinois.gov>; Hayes, Bradley <Bradley.Hayes@illinois.gov>
Cc: Miller, Stephanie J <stephanie.miller3@woodplc.com>; Lehmann, Michael <michael.lehmann@woodplc.com>
Subject: [External] RE: Salt Creek Township Solar project - EcoCat Review (#2112025)

Hi Heather,

We have a couple of questions as we begin preparation of the Illinois chorus frog conservation plan for the Salt Creek Township Solar project in Mason County for Azimuth Renewables.

1) Would IDNR be able to provide us with a current map (or GIS shapefiles) of Illinois chorus frog known breeding ponds/records in Mason County or within 3 miles of our project area (KMZ map attached)?
2) Would the IDNR Realty Division be able to provide us with a current per acre land valuation for land in the vicinity of our project (Mason County)?

Thank you in advance for any assistance you can provide!
Rebecca

Rebecca Porath
Senior Environmental Scientist
Mobile: +1 (573) 256-9891
www.woodplc.com

From: Osborn, Heather <Heather.Osborn@Illinois.gov>
Sent: Thursday, June 9, 2022 1:24 PM
To: Porath, Rebecca <rebecca.porath@woodplc.com>; Hayes, Bradley <Bradley.Hayes@illinois.gov>
Cc: Miller, Stephanie J <stephanie.miller3@woodplc.com>
Subject: RE: Salt Creek Township Solar project - EcoCat Review (#2112025)

Hi Rebecca,

I've read over your previous emails and it sounds like an ITA for ICF is going to be needed for this project. I've included the Word version of the Conservation Plan Template. The Conservation Plan serves as the application for an ITA. I've also included a PDF of the Guidelines document, which provides explanation of the process and requirements in a user friendly way that the admin rule doesn't.

Please let me know if you have any questions.

Heather

Heather Osborn
Incidental Take Authorization Coordinator
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702

Cell: (217)720-8910
Desk phone: (217)782-2456
ITA: (217)557-8243

From: Porath, Rebecca <rebecca.porath@woodplc.com>
Sent: Thursday, June 9, 2022 12:32 PM
To: Hayes, Bradley <Bradley.Hayes@illinois.gov>

Cc: Osborn, Heather <Heather.Osborn@Illinois.gov>; Miller, Stephanie J <stephanie.miller3@woodplc.com>
Subject: [External] Salt Creek Township Solar project - EcoCat Review (#2112025)

I have attached the EcoCat Review (#2112025) for the Salt Creek Township Solar project that was referenced in the previous email.

Thank you,
Rebecca

Rebecca Porath
Senior Environmental Scientist
Mobile: +1 (573) 256-9891
www.woodplc.com

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including all attachments. Receipt by an unintended recipient does not waive attorney-client privilege, attorney work product privilege, or any other exemption from disclosure.

Appendix B

Illinois Chorus Frog Monitoring Report

January 2023

Technical Memorandum

Project Name:	**Salt Creek Township Solar Site Illinois Chorus Frog Monitoring**
Project Number:	**325222263**
Date:	**June 24, 2022**
To:	**Project Team**
Subject:	**2022 Illinois Chorus Frog Monitoring**

Prepared by:	Kirby Branch, Wood
Reviewed by:	Stephanie Miller, Wood

1.0 Introduction

This memorandum presents the results of the anuran call surveys for the Illinois chorus frog (ICF) (*Pseudacris illinoensis*) near a proposed site of a 50 MWac utility-scale solar project. The proposed solar site is located south of Mason City in Mason County, Illinois (Figure 1). Reported survey results will be used for Azimuth Renewables support for any subsequent coordination required with the Illinois Department of Natural Resources.

1.1 Background Ecology

The ICF has a limited habitat range within the Mississippi River Valley of Arkansas, Illinois and Missouri. The proposed solar project is within this range. The ICF is listed as state-threatened in Illinois and only found in areas of sandy soils and prairies and requires ephemeral ponds and wetlands to complete their life cycle. Breeding occurs from February to April, during which time call activity is the most prominent if weather conditions are ideal. Tadpoles metamorphose into young frogs by late May to mid-June. Young frogs then move to burrowing sites where they spend much of the year buried underground.

2.0 Methods

2.1 Anuran Call Surveys

A Wood Environment & Infrastructure Solutions (Wood) biologist conducted weekly anuran call surveys and visual site inspections of the proposed solar site for ten nights, from March 9th to May 9th, 2022, to detect the potential occurrence of the ICF. Prior to conducting the weekly night anuran call surveys, Wood personnel monitored the proposed solar site regional weather forecast for the week to select the night(s) with the most ideal conditions for potential ICF call activity. These conditions included temperatures no lower than 32°F with calm to light wind speeds. Rain during the time of surveys was acceptable if it did not impede the ability of the

biologist to hear anuran calling. Anuran presence or absence was determined using call surveys (i.e., audible species-specific frog calls).

Eight survey locations were selected near the project site based upon presence of water features that could serve as ICF habitat (drainage ditches and channels and associated low-lying areas). At each the survey location near the proposed solar site (see Figure 1), the surveyor recorded all anuran calls at each sampling location for roughly 10-15 minutes each with the total time on site being approximately an hour and a half. Data was recorded and included information on cloud cover, temperature, and wind speed. Calls were categorized using a call index with the following categories:

0 = None - no calls

1 = Individuals – individuals can be counted; there is spacing between calls

2 = Overlapping – calls of individuals can be distinguished but there is some overlapping

3 = Continuous Chorus – full chorus, calls are constant, continuous, and overlapping

2.2 Visual Site Inspection

Visual inspection of the four initial survey locations was conducted prior to sunset on March 9th to confirm presence of ICF habitat. A site reconnaissance was conducted two hours before sunset on March 14th to potentially identify any additional ICF survey locations within the project area based upon presence of ICF habitat. Three additional survey locations were identified and included with the initial survey locations for the 2022 ICF surveys. Survey locations were photo-documented and GPS coordinates collected to reflect site conditions. Photos of each survey location are included in the attached photo log.

Additionally, an eighth survey site was added during the April 5th monitoring event. This was added while enroute from survey point 1 to survey point 7, when an individual ICF was heard calling from a saturated region in an ag. field along the road. Photo supporting documentation of this location will need to be completed prior to the first survey in 2023.

3.0 Results and Discussion

3.1 Survey Conditions

ICF monitoring was performed one night a week over ten weeks starting in March and ending the second week in May. Each night a Wood biologist arrived on site at sunset with surveys ending approximately one hour after last sunlight. The 2022 nightly anuran surveys were completed on March 9th, March 14th, March 21st, March 29, April 5th, April 11th, April 21st, April 28th, May 4th and May 9th.

Weather conditions varied throughout the 2022 ICF survey period. The lowest temperature recorded was 34°F on March 9th and the highest recorded temperature was 76°F on May 9th. Wind and sky coverage ranged from a calm breeze to wind speeds greater than 19 mph and

clear skies to drizzle/light rain conditions, respectively. No significant rain events (equal to or greater than one inch cumulative 24-hour total) occurred during any of the ten survey dates.

3.2 Visual Site Inspection

As described above in Section 2.2, a visual site inspection and reconnaissance of the solar site was conducted in March 2022. The findings are as follows and displayed in Figure 1 and photo log).

Potentially suitable ICF habitat at survey location 1 includes drainage ditches along both sides of the road with one between the road and an agricultural field to the south and the other between the road and an industrial facility to the north. Location 2 also has drainage ditches on each side of the road with agricultural fields abutting both ditches. These roadside ditches appear to only hold water during and immediately after rain events.

Potentially suitable ICF habitat at survey locations 3 and 5 include a drainage channel with an associated roadway bridge surrounded by agricultural fields. The drainage channel at survey location 3 contained water on both sides of the bridge. The drainage channel at location 5 had water to the north of the bridge but lacking south of the bridge at the time of the inspection. Although the portion south of the bridge did not contain water, hydrological indicators were present (ordinary high-water mark and sediment/rock sorting).

Potentially suitable ICF habitat at location 4 included a low-lying area with an associated drainage ditch north of the road that has the capacity to hold water after a precipitation event. Standing pools of water were observed at the time of the inspection.

Potentially suitable ICF habitat at survey locations 6 and 7 included pools of water from roadway culverts. Location 6 had pools of water on each side of the road, whereas location 7 only had pooled water to the south of the road. Both were surrounded by agricultural fields and appear to hold water for longer periods of time.

3.3 ICF Survey

Of the ten total surveys, only two surveys had recorded ICF activity, March 21st and April 5th. Observed ICF calls were of individuals at five of the eight survey locations. On March 21st, individual ICF calling was recorded at surveys locations 1, 2 and 7. On April 5th, individual ICF calling was recorded at survey locations 3 and 8. Additionally, nine of the ten total surveys observed the calls of other anuran species (Table 1). These species included western chorus frog (*Pseudacris triseriata*), southern leopard frog (*Lithobates sphenocephalus*), American toad (*Anaxyrus americanus*), Fowler's toad (*Anaxyrus fowleri*) and gray tree frog (*Dryophytes versicolor*).

During the April 5th survey event, calling of an individual ICF was heard in between survey locations 2 and 7 from the south. This individual was heard within a saturated region in the northwest corner of an agricultural field. This saturated area can be seen from aerial imagery. If determined that ICF surveys should continue for the 2023 breeding season, supporting photo documentation of survey location 8 will need to be collected.

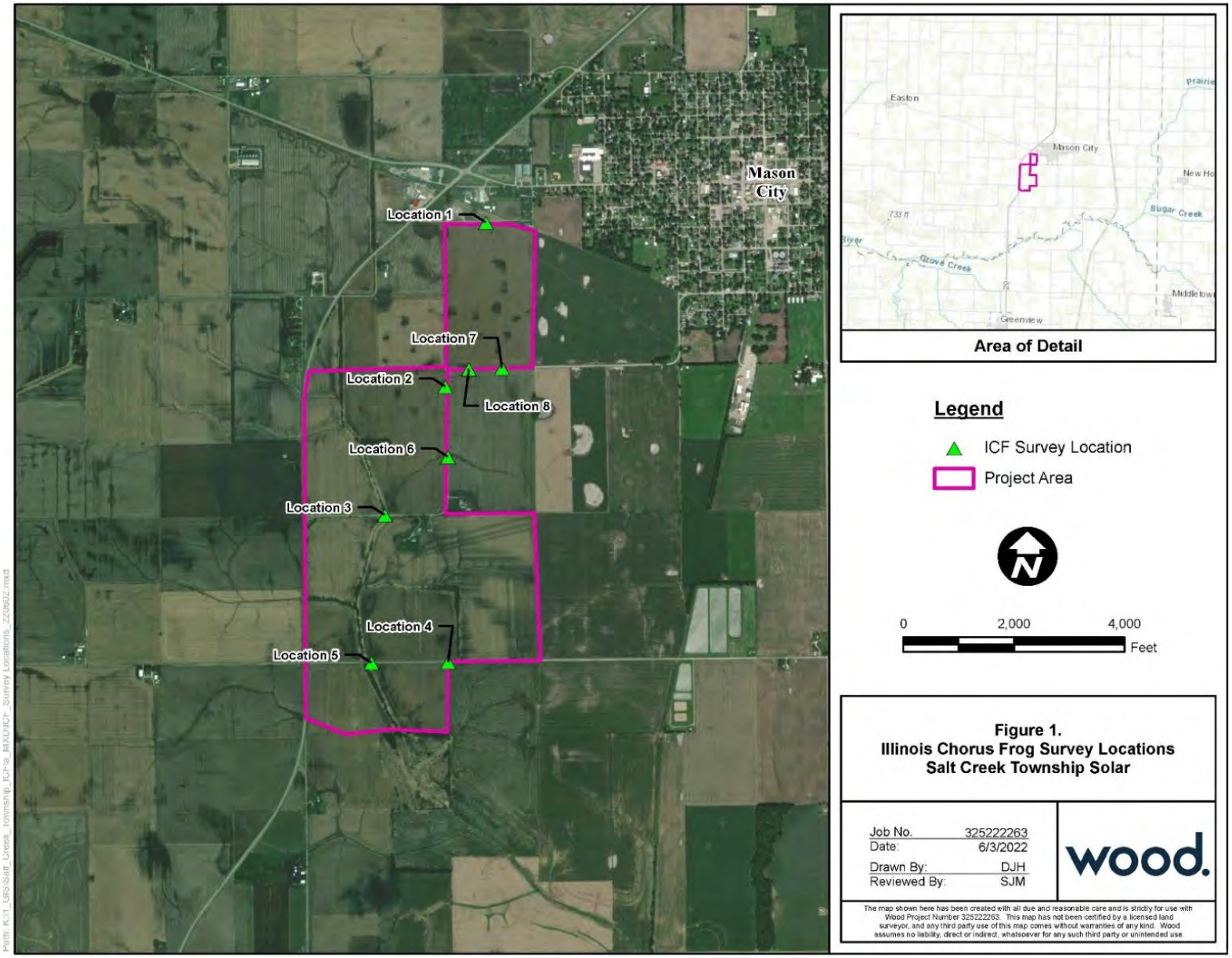
The 2022 ICF surveys confirmed presence of ICF and suitable habitat and encompassed the majority of the species' breeding season. Each weekly survey was conducted on a date that with suitable weather conditions for potential ICF activity.

Table 1. Anuran Species Heard During 2022 Surveys near the Salt Creek Township Solar Site

Date	Species	Calling Codes by Location[1]							
		1	2	3	4	5	6	7	8[2]
14-Mar	Western chorus frog	0	1	0	0	0	0	2	-
21-Mar	Illinois chorus frog	1	1	0	0	0	0	1	-
	Western chorus frog	2	3	3	3	3	3	3	-
	Southern leopard frog	0	1	0	0	0	0	0	-
29-Mar	Western chorus frog	0	2	1	0	0	0	2	-
5-Apr	Illinois chorus frog	0	0	1	0	0	0	0	1
	Western chorus frog	3	3	3	3	3	3	3	3
	Southern leopard frog	0	1	0	0	0	1	1	1
11-Apr	Western chorus frog	0	3	3	3	3	3	3	3
	Southern leopard frog	0	1	1	0	0	1	2	1
	American toad	0	0	1	0	1	0	0	0
21-Apr	Western chorus frog	2	2	3	3	3	3	3	1
	Southern leopard frog	0	0	1	0	0	0	1	0
	American toad	3	3	3	3	3	3	3	3
28-Apr	Western chorus frog	0	1	0	1	0	0	1	1
	Southern leopard frog	0	0	0	0	0	1	0	0
4-May	Western chorus frog	2	3	2	1	1	3	3	3
	Southern leopard frog	0	1	1	1	0	1	0	0
	American toad	1	1	1	0	0	1	0	0
9-May	Western chorus frog	2	2	0	1	0	2	2	0
	American toad	0	3	0	0	0	3	3	3
	Fowler's toad	3	0	1	0	0	0	1	0
	Gray treefrog	3	3	0	0	1	0	3	3

[1] Calling Codes: 0 = no calls, 1 = Individuals, 2 = Overlapping, 3 = Continuous

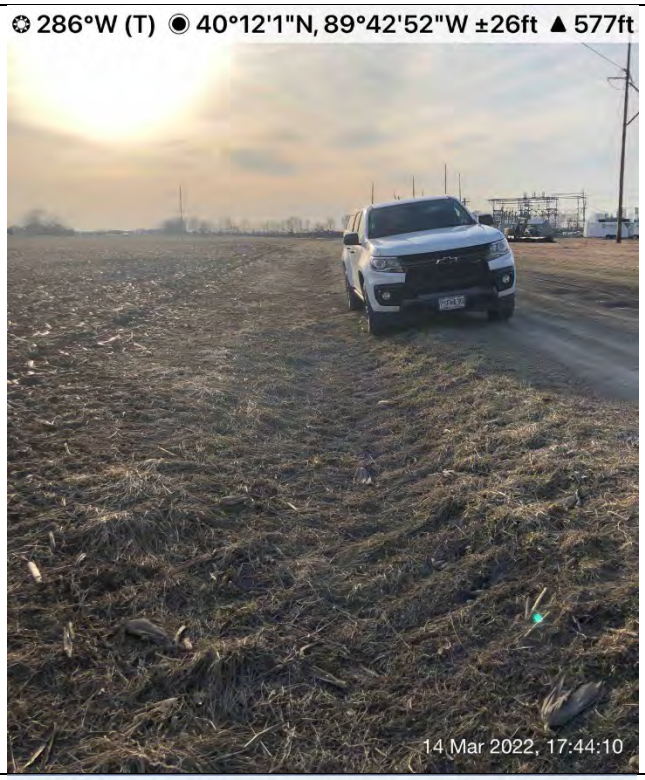
[2] This site was added during the survey conducted on 4/5/2022.



Wood Environment & Infrastructure Solutions
15933 Clayton Road, Suite 110
Ballwin, MO 63011

Photo Log

Wood Environment & Infrastructure Solutions
15933 Clayton Road, Suite 110
Ballwin, MO 63011

	**3/14/2022** **Photo 1.** Survey Location 1: Drainage ditch. Direction of View (DOV): West
	**3/14/2022** **Photo 2.** Survey Location 1: Drainage ditch. DOV: East

	**3/14/2022** **Photo 3.** Survey Location 2: Drainage ditch. DOV: North
	**3/14/2022** **Photo 4.** Survey Location 2: Drainage ditch. DOV: South

	**3/14/2022** **Photo 5.** Survey Location 3: Roadway bridge over a drainage channel. DOV: South
	**3/14/2022** **Photo 6.** Survey Location 3: Roadway bridge over a drainage channel. DOV: North

	**3/14/2022** **Photo 7.** Survey Location 4: Low lying area connected to a drainage ditch. DOV: West
	**3/14/2022** **Photo 8.** Survey Location 4: Low lying area connected to a drainage ditch. DOV: North

	**3/14/2022** **Photo 9.** Survey Location 5: Roadway bridge over a drainage channel. DOV: North
	**3/14/2022** **Photo 10.** Survey Location 5: Roadway bridge over a drainage channel. DOV: South

	**3/14/2022** **Photo 11.** Survey Location 6: Drainage culvert under road. DOV: East
	**3/14/2022** **Photo 12.** Survey Location 6: Drainage culvert under road. DOV: East

	**3/14/2022** **Photo 13.** Survey Location 7: Drainage culvert under road. DOV: West
	**3/14/2022** **Photo 14.** Survey Location 7: Drainage culvert under road. DOV: South

Appendix C

Wetland Delineation and Jurisdictional Determination

January 2023

May 7, 2021

Azimuth Renewables, LLC
4240 Duncan Avenue, Suite 200
St. Louis, Missouri 63110

Attn: David Bunge, President
P: (636) 474-9067
E: david@azimuth.energy.com

Re: Wetland Delineation Report
Salt Creek Solar Site
Mason City, Mason County, Illinois
Terracon Project No. N1217167

Dear Mr. Bunge:

Terracon is pleased to submit the wetland delineation report for the above-referenced project. Based on the results of the assessment, Terracon observed two wetlands and four streams on the project site.

A cover letter addressed to the U.S. Army Corps of Engineers (USACE) has been included with the enclosed report; however, a copy of this report has not been provided to USACE by Terracon. A copy of the wetland delineation report and attached letter should be submitted to USACE for review and concurrence. The USACE can be contacted at the following address:

U.S. Army Corps of Engineers, Rock Island
ATTN: Regulatory Branch
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Terracon appreciates the opportunity to have worked for you on this project. If you have any questions regarding the content of this report, please contact me at (513) 612-9094 or via email at swest@terracon.com.

Sincerely,
TERRACON Consultants, Inc.

Michael Perkins
Senior Staff Scientist

Scott E. West
Group Manager

Wetland Delineation Report

Salt Creek Solar Site

Mason City, Mason County, Illinois

Date: May 7, 2021

Prepared for:
Azimuth Renewables, LLC
St. Louis, Missouri

Prepared by:
Terracon Consultants, Inc.
Cincinnati, Ohio

May 7, 2021

U.S. Army Corps of Engineers, Rock Island
ATTN: Regulatory Branch
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Re: Wetland Delineation Report
Salt Creek Solar Site
Mason City, Mason County, Illinois
Terracon Project No. N1217167

Regulatory Branch:

Terracon is pleased to submit the wetland delineation report prepared for Azimuth Renewables, LLC for the above-mentioned project. This assessment describes the observations made during our site visit and other sources of information used to investigate the project site for wetlands and other waterbodies. Based on the results of the assessment, two wetlands and four streams are present at the project site. At this time, we are requesting that your office perform a review of the report for the project site and advise our client if a permit will be required for any proposed activities.

If you have any questions concerning this report, please contact Scott West at (513) 612-9094 or by e-mail at swest@terracon.com.

Sincerely,
TERRACON Consultants, Inc.

Michael Perkins
Senior Staff Scientist

Scott E. West
Group Manager

Copy to: Mr. David Bunge
Azimuth Renewables, LLC
4240 Duncan Avenue, Suite 200
St. Louis, Missouri 63110

TABLE OF CONTENTS

Page

Wetland Delineation Report
Salt Creek Solar Site
Mason City, Mason County, Illinois
Terracon Project No. N1217167
May 7, 2021

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Azimuth Renewables, LLC (client) to perform a wetland delineation to determine if wetlands or other waters under the jurisdiction of the United States Army Corps of Engineers (USACE) or the Illinois Environmental Protection Agency (IEPA) are present at the approximately 687-acre property, hereafter referred to as the project site. The project site is located near Mason City, in Mason County, Illinois. The project site is also located in the Mason City subwatershed (HUC: 071300090803 within the Salt Creek watershed (HUC: 07130009).

The project site location is depicted on Exhibits 1 and 4 in Appendix A.

The purpose of performing this wetland delineation of the project site was to characterize the existing site conditions, observe the project site for suspect waterbodies and wetlands and provide a recommendation regarding whether or not suspect waterbodies (if observed) would be considered jurisdictional with the USACE.

It is important to note that the findings presented in this report represent Terracon's professional opinion, based upon field observations made during the site visit and our experience with current regulatory guidance under the Clean Water Act. In order to verify the delineation boundaries and jurisdictional classifications presented in this report, the USACE must review this report and make a jurisdictional determination.

2.0 SCOPE OF SERVICES

Terracon performed the following scope of work:

- Reviewed United States Geologic Survey (USGS) topographical maps, National Wetlands Inventory (NWI) maps, United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) soil maps and surveys, Federal Emergency Management Agency (FEMA) Flood Hazard Zone (FHZ) data, and aerial imagery to assist with identifying suspect Waters of the United States (WOTUS) and wetland areas at the project site.
- Mobilized to the project site to conduct the preliminary site visit.
- Prepared a map showing approximate locations of suspect waterbodies or wetland areas observed during the site visit, if any.

- Completed a wetland delineation report that included site characterization information, a discussion of applicable data, and recommendations for the project site.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Prior to performing the delineation, several map and aerial photograph resources were reviewed to assist with identifying potential wetland areas at the project site. Each source of data is described in detail below.

3.1 Topographic Map

The United States Geologic Survey (USGS) Mason City, IL 7.5-Minute Topographic Quadrangle Maps of the project site were reviewed to identify drainages or potential wetlands within the project site. The project site appears to be range from 530 feet above sea level (asl) in the southeastern portion of the project site to 570 feet asl on multiple low hills throughout the project site. An unnamed, intermittent tributary to Salt Creek is depicted draining southward through the center of the project site and exiting near the southeastern corner. One intermittent stream is depicted as draining from the western project site boundary and discharging into the aforementioned stream near the center of the project site. Two more intermittent streams are depicted as discharge into the main channel in the southern portion of the project site, one draining from the east and one from the west. A wetland area is also depicted in the southeastern corner of the site at the confluence of two streams.

The topographic map can be seen as Exhibit 1 in Appendix A.

3.2 National Wetlands Inventory Map

The NWI Map of the project site was reviewed to identify potential wetland areas. The map for the project site was published by the U.S. Department of the Interior's Fish and Wildlife Service (USFWS) and depicts probable wetland areas based on stereoscopic analysis of high-altitude aerial photographs and analysis of infrared bands from remotely-sensed imagery. The NWI map depicts an intermittent stream (RS4BC) draining from the north through the center of the project site, meeting another intermittent stream (RS4BC) near the center of the project site at which point the stream is an excavated intermittent stream (R4SBCx). Two more intermittent streams (R4SBC) intersect the main stem farther south. Two emergent wetlands (PEM1A) are depicted at the confluence of two of the streams in the southeastern portion of the project site. Finally, two emergent wetlands (PEM1Af) are depicted northeastern portion of the project site.

The NWI map for the project site is included as Exhibit 2 in Appendix A.

3.3 Soil Survey

Data from the soil survey of Mason County, Illinois (2004) was reviewed to identify soil types, including hydric soils. Data for the soil survey was compiled by the USDA NRCS and accessed at https://websoilsurvey.nrcs.usda.gov/. Hydric soils information was gathered from the 'National Hydric Soils List' (USDA NRCS, https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/). A soil survey map is included as Exhibit 3 in Appendix A.

The following soil types were identified within the project site boundaries on the soil survey map:

- Onarga sandy loam, 2 to 5 percent slopes (150B): This soil map unit is defined as well drained and found on uplands and/or stream terraces This soil map unit is not classified as hydric.
- Edgington silt loam, 0 to 2 percent slopes (272A): This soil map unit is defined as poorly drained and found on uplands and/or stream terraces. This soil map unit is classified as hydric.
- Tama silt loam, 0 to 2 percent slopes (36A): This soil map unit is defined as well drained and is typically found on uplands and stream terraces. This soil map unit is classified as hydric.
- Tama silt loam, 2 to 5 percent slopes (36B): This soil map unit is defined as well drained and is typically found on uplands and stream terraces. This soil map unit is classified as hydric.
- Tama silt loam, 5 to 12 percent slopes, eroded (36C2): This soil map unit is defined as well drained and is typically found on uplands and stream terraces. This soil map unit is classified as hydric.
- Ipava silt loam, 0 to 2 percent slopes (43A): This soil map unit is defined as somewhat poorly drained and typically found on uplands. This soil map unit is classified as hydric.
- Sable silty clay loam, 0 to 2 percent slopes (68A): This soil map unit is defined as somewhat poorly drained and typically found on uplands. This soil map unit is classified as hydric.
- Lawndale silt loam, 0 to 2 percent slopes (683A): This soil map unit is defined as somewhat poorly drained and is typically found on uplands. This soil map unit is classified as hydric.
- Broadwell silt loam, 0 to 2 percent slopes (684A): This soil map unit is defined as a well-drained upland soil formed in loess. This soil map unit is classified as hydric.
- Broadwell silt loam, 2 to 5 percent slopes (684B): This soil map unit is defined as a well-drained upland soil formed in loess. This soil map unit is classified as hydric.
- Broadwell silt loam, 5 to 12 percent slopes, eroded (684C2): This soil map unit is defined as a well-drained upland soil formed in loess. This soil map unit is classified as hydric.
- Sawmill silt loam, 0 to 2 percent slopes, eroded (8107A): This soil map unit is defined as poorly drained and typically found on flood plains. This soil map unit is classified as hydric.
- Sawmill silt loam, 0 to 2 percent slopes, occasionally flooded, overwash (8107A+): This soil map unit is defined as poorly drained and typically found on flood plains. This soil map unit is classified as hydric.
- Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded (8284A): This soil map unit is defined as somewhat poorly drained and is typically found on flood plains. This soil map unit is classified as hydric.
- Tallula-Bold silt loams, 10 to 18 percent slopes, eroded (965D2): This soil map unit is defined as well drained and typically found on uplands. This soil map unit is not classified as hydric.

3.4 Aerial Image

A recent aerial image (2019) of the project site was reviewed to evaluate land use and vegetative cover. The majority of the project site appears to consist of row crop agricultural land, with an area of grassland with sparse shrubs and/or trees in the southeastern portion of the project site. One forested area is apparent in the north-central portion of the project site, located on the eastern side of the main channel draining north to south through the project site. Additionally, drainage patterns are apparent across all sections of the project site. The aerial images are included as Exhibit 4 in Appendix A.

3.5 FEMA Flood Hazard Zone Data

Terracon reviewed FEMA FHZ data to identify areas that may have elevated likelihoods of containing WOTUS. The FEMA FHZ data indicated that the entirety of the project site is in Zone X, an area of minimal flood hazard. The FEMA FHZ data are included as Exhibit 5 in Appendix A.

4.0 FIELD TECHNIQUES

Terracon personnel, Michael Perkins conducted a reconnaissance of the project site on April 19, 2021, to characterize the existing site conditions and observe for the presence of wetlands and potential jurisdictional waters. Characteristics of jurisdictional waters and wetland areas were assessed utilizing the criteria detailed in sections 4.1 and 4.2 of this report. The evaluation methods generally followed the routine on-site determination method referenced in the 1987 USACE Manual and 2010 Midwest Regional Supplement.

4.1 Wetland Observations

Wetlands generally have three essential characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Based on NWI data, aerial imagery and topographical data, on-site areas were investigated for potential wetland properties. Additional areas were investigated, based on observations made during the site reconnaissance. Data regarding the three essential characteristics was gathered within observed suspect wetland areas to further delineate boundaries.

4.1.1. Plant Community Assessment

Suspect areas were visually observed to determine the species, when possible, and absolute percentage of ground cover for four stratum of plant community types. Herbs were generally observed within a five-foot radius, shrubs/saplings within a fifteen-foot radius, and trees and vines within a thirty-foot radius of the observation location.

For each species of vegetation observed, their wetland indicator status was evaluated. Indicator status was determined using the NRCS Plants Database. Indicator categories for vegetation are presented below:

- Obligate Wetland (OBL) - occur almost always (estimated probability greater than 99%) under natural conditions in wetlands.
- Facultative Wetland (FACW) - usually occur in wetlands (estimated probability 67% - 99%) but occasionally found in non-wetlands.
- Facultative (FAC) - equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).
- Facultative Upland (FACU) - usually occur in non-wetlands (estimated probability 67% - 99%) but occasionally found in wetlands.
- Obligate Upland (UPL) – rarely occur in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The percent cover of each stratum was determined and dominance was evaluated. Dominant species were the most abundant species that accounted for more than 20 percent of the absolute percent coverage of the stratum. The number of dominant species with an indicator status of OBL, FACW, and/or FAC was compared to the total number of dominant species across all strata. Typically, when more than 50 percent of the dominant species had an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation was present.

If the percentage of dominant species with an indicator status of OBL, FACW, and/or FAC was less than 50 percent, prevalence index and morphological adaptations may have been evaluated to confirm if hydrophytic vegetation was present or absent.

4.1.2. Hydric Soils Assessment

After Terracon evaluated wetland vegetation, subsurface soil samples were collected using a soil probe or similar method. The samples were collected to a depth of approximately 15 inches below ground surface and were visually compared to Munsell Soil Color Charts (Munsell, 2009), which aided in the evaluation of hydric soil characteristics. The soil samples were further examined for hydric soil indicators including, but not limited to, histosol, thick dark surface, sandy gleyed matrix, sandy redox, loamy gleyed matrix, redox dark surface, and/or redox depressions. If these or other hydric soil indicators were observed in the subsurface soil sample, the observation location was considered to have hydric soil.

4.1.3 Wetland Hydrology Assessment

Visual indicators of wetland hydrology were evaluated. Examples of primary wetland hydrology indicators include, but are not limited to, surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, iron deposits, inundation visible on aerial imagery, sparsely vegetated concave surface, and water-stained leaves. If at least one primary or two secondary indicators were observed, the observation location was considered to have wetland hydrology.

4.1.4 Classification of Wetlands

Upon completion of the review of the three wetland criteria at each area, a wetland determination was made. Under normal circumstances, if one or more of the wetland criteria were not identified, the area was not considered to be a wetland. If all three wetland indicators were identified, the area was classified as wetland. Additional observations were made throughout the wetland area to define the wetland/non-wetland boundary. Vegetation, soil and hydrology assessment data from at least one location within the wetland and one upland location outside of the wetland were recorded on a USACE Wetland Determination Form (Data Sheet).

4.2 Other Waters Observations

Terracon also made observations of site features that may be considered a jurisdictional waterbody. If a potential jurisdictional waterbody was identified, observations regarding its characteristics were recorded. Potential jurisdictional waterbodies were evaluated based on the observation of the following characteristics:

- Flow Characteristics:
  - Perennial: contains water at all times except during extreme drought.
  - Intermittent: carries water a considerable portion of the time, but ceases to flow occasionally or seasonally.
  - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.
- Ordinary High-Water Mark:
  - The limit line on the shore established by the fluctuation of the water surface. It is shown by such things as a clear line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, the presence of litter and debris or other features influenced by the surrounding area.
- Bank Shape Descriptions:
  - Undercut: banks that overhang the stream channel.
  - Steep: bank slope of approximately greater than 30 degrees.
  - Gradual: bank slope of approximately 30 degrees or less.
- Aquatic Habitat Descriptions:

- Pool: deeper portion of a stream where water flows slower than in neighboring, shallower portions, smooth surface, and finer substrate.
- Riffle: shallow area in a stream where water flows swiftly over gravel and rock or other coarse substrate resulting in a rough flow and a turbulent surface.
- Run: section of a stream with a low or high velocity and with little or no turbulence on the surface of the water.

5.0 FIELD OBSERVATIONS RESULTS

On April 19, 2021, Terracon performed field observations at the project site. The project site predominantly consisted of row crop agricultural land with an area of grassland with sparse shrubs and/or trees in the southeastern portion of the project site. One forested area is apparent in the north-central portion of the project site, located on the eastern side of the main channel draining north to south through the project site. Ground photographs, included in Appendix B, provide an indication of the physical characteristics observed during the site visit. Please refer to Appendix A: Exhibit 6.

Descriptions of the observed areas are listed in the following sections.

5.1 Plant Communities Found at Project Site

5.1.1 Emergent Wetlands

The dominant plant species observed in the emergent wetland were black willow (*Salix nigra*), narrow-leaf cat tail (*Typha angustifolia*), red maple (*Acer rubrum*), Indian hemp (*Apocynum cannabinum*), and reed canary grass (*Phalaris arundinacea*).

5.1.2 Forested Uplands

The dominant plant species observed in the forested uplands, which were predominantly located in the north-central portion of the project site, consisted of black cherry (*Prunus serotina*), red maple (*Acer rubrum*), amur honeysuckle (*Lonicera maackii*), Osage-orange (*Maclura pomifera*), black locust (*Robinia pseudoacacia*), and hackberry (*Celtis occidentalis*).

5.1.3 Agricultural Uplands

The dominant plant species observed in the row crop agricultural upland portions of the site were remnants of corn (*Zea mays*) and purple deadnettle (*Lamium purpureum*), with boundary areas containing Queen Anne's lace (*Daucus carota*), reed canary grass and fescue (*Festuca ovina*).

5.1.4 Shrub-Scrub Uplands

The dominant plant species observed in the shrub-scrub upland portions of the site were hawthorn (*Crataegus* sp.), honey locust (*Gleditsia triacanthos*), amur honeysuckle, garlic mustard (*Alliaria petiolata*), and old field blackberry (*Rubus alumnus*).

5.2 Wetland Area Description

The following wetlands were observed at the project site during the site reconnaissance.

Wetland	Size (acres)	Cowardin Classification	Water Sources	USACE Jurisdictional (Y/N)
W-A	13.24	PEM	Precipitation, Overland Flow, Stream 1	Y
W-B	0.15	PEM/PFO	Precipitation, Overland Flow,	Y
TOTAL	**13.39 acres**			

PEM – Palustrine emergent wetland

Wetland A discharges directly into Stream 2, and Wetland B discharges directly into Stream 3. The on-site wetlands are considered jurisdictional based on their significant nexus to Traditionally Navigable Waters (TNWs).

5.3 Streams

The following streams were observed at the project site during the site reconnaissance.

Streams	Length (linear feet)	Flow Regime	USACE Jurisdictional (Y/N)
S-1	910	Intermittent	Y
S-2	6,253	Perennial	Y
S-2	3,808	Intermittent	Y
S-3	1,942	Intermittent	Y
S-4	903	Perennial	Y
TOTAL	**13,816 lf**		

Intermittent and perennial streams are considered jurisdictional and regulated as WOTUS under the Navigable Waters Protection Rule of 2020.

5.4 Other Waters

Agricultural drains/grassed, erosion control features were observed across the site. Additionally, a roadside ditch (630 lf) was observed along the northern site boundary on the southern side of CR 910N and discharging into Stream 4. These features are not considered to be jurisdictional.

6.0 SUMMARY AND CONCLUSIONS OF FIELD OBSERVATIONS

A wetland delineation was conducted at an approximately 687-acre site located near Mason City, Mason County, Illinois on April 19, 2021. A review of the project site was conducted utilizing readily available information including, but not limited to, topographical, aerial, soils, floodplain, and wetland data. In addition, a preliminary site visit was performed to characterize the existing site conditions and observe the project site for suspect waterbodies and wetlands (if any). A summary of field observations and conclusions concerning jurisdictional status is outlined in the following sections.

6.1 Wetlands

Two wetlands, totaling 13.39 acres, were observed on the project site during the site reconnaissance. Terracon considers the on-site wetlands jurisdictional based on their significant nexus to TNWs.

6.2 Streams

Four streams totaling 13,816 linear feet were observed on the project site during the site reconnaissance. Terracon considers all streams to be jurisdictional based on their significant nexus to TNWs and intermittent and/or perennial flow status.

6.3 Other Waters

Agricultural drains/grassed, erosion control features were observed across the site. Additionally, a roadside ditch (630 lf) was observed along the northern site boundary on the southern side of CR 910N and discharging into Stream 4. These features are not considered to be jurisdictional.

7.0 RECOMMENDATIONS

According to our preliminary site investigation, potential jurisdictional waters are present on the project site. However, for all on-site areas, only the USACE can make the final determination on the jurisdictional status of waterbodies, and on the need for permit processing and compensatory mitigation. Additionally, non-jurisdictional wetlands, ponds, and streams may also be considered Waters of the State and could potentially be regulated by the IEPA. Again, Terracon recommends a copy of this report be submitted to the USACE for their final determination of the findings of this delineation on the site. The USACE can be contacted at the following address:

U.S. Army Corps of Engineers, Rock Island
ATTN: Regulatory Branch

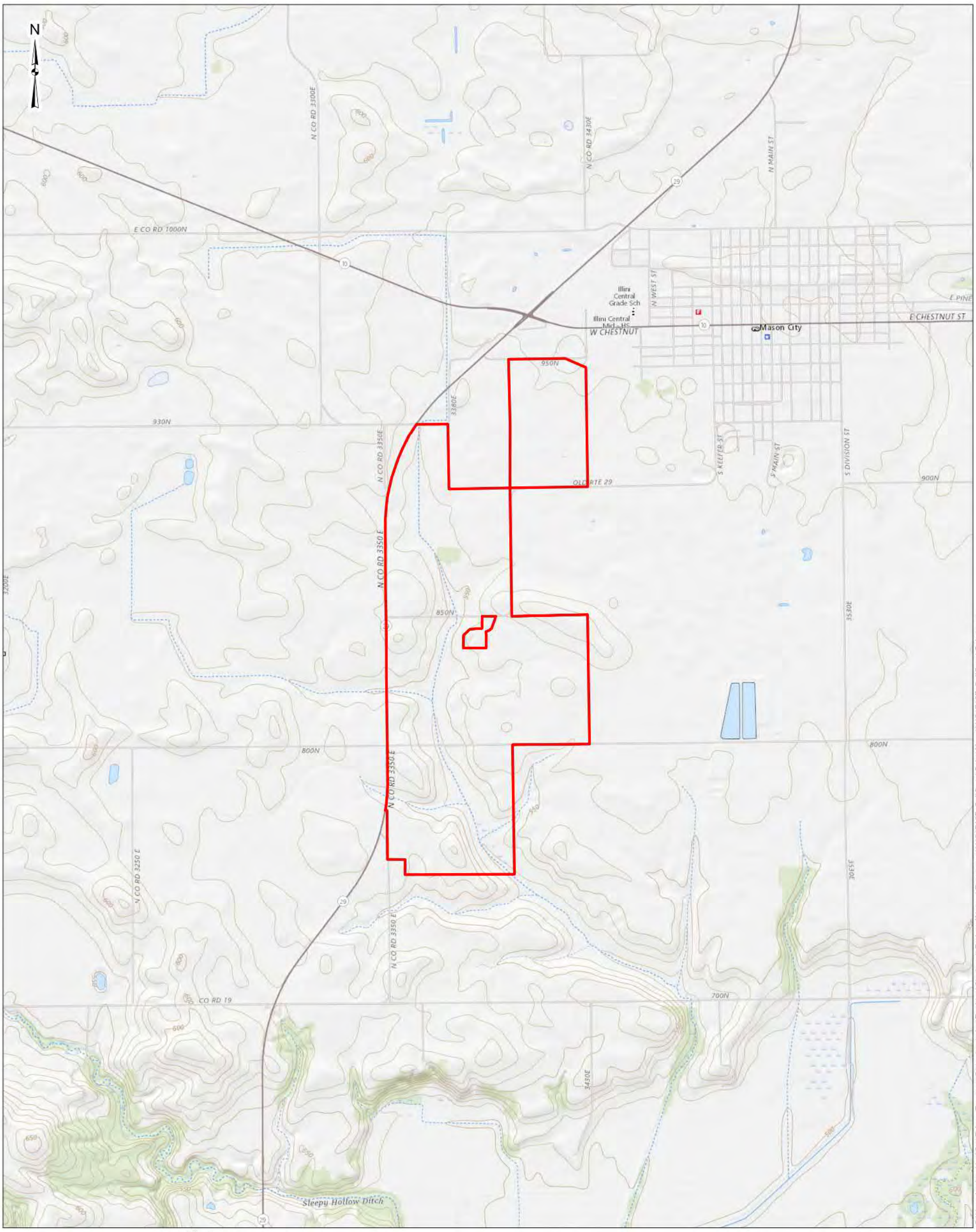
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

8.0 GENERAL COMMENTS

The wetland delineation was performed in accordance with generally accepted practices of this profession undertaken in similar studies at the same time and in the same geographical area. A wetland delineation, such as the one performed at this site, is of limited scope, is noninvasive, and cannot eliminate the potential that wetlands or waterbodies are present at the site beyond what is identified by the limited scope of this preliminary assessment. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. No biological assessment can wholly eliminate uncertainty regarding the potential for concerns in connection with a project. The limitations of this preliminary assessment should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either express or implied, are intended or made.

APPENDIX A – EXHIBITS



Feet

0 1,000 2,000 4,000

Project Site Boundary

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Mason City, IL 7.5' USGS Topographic Quadrangle

Project No.:	N12127167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

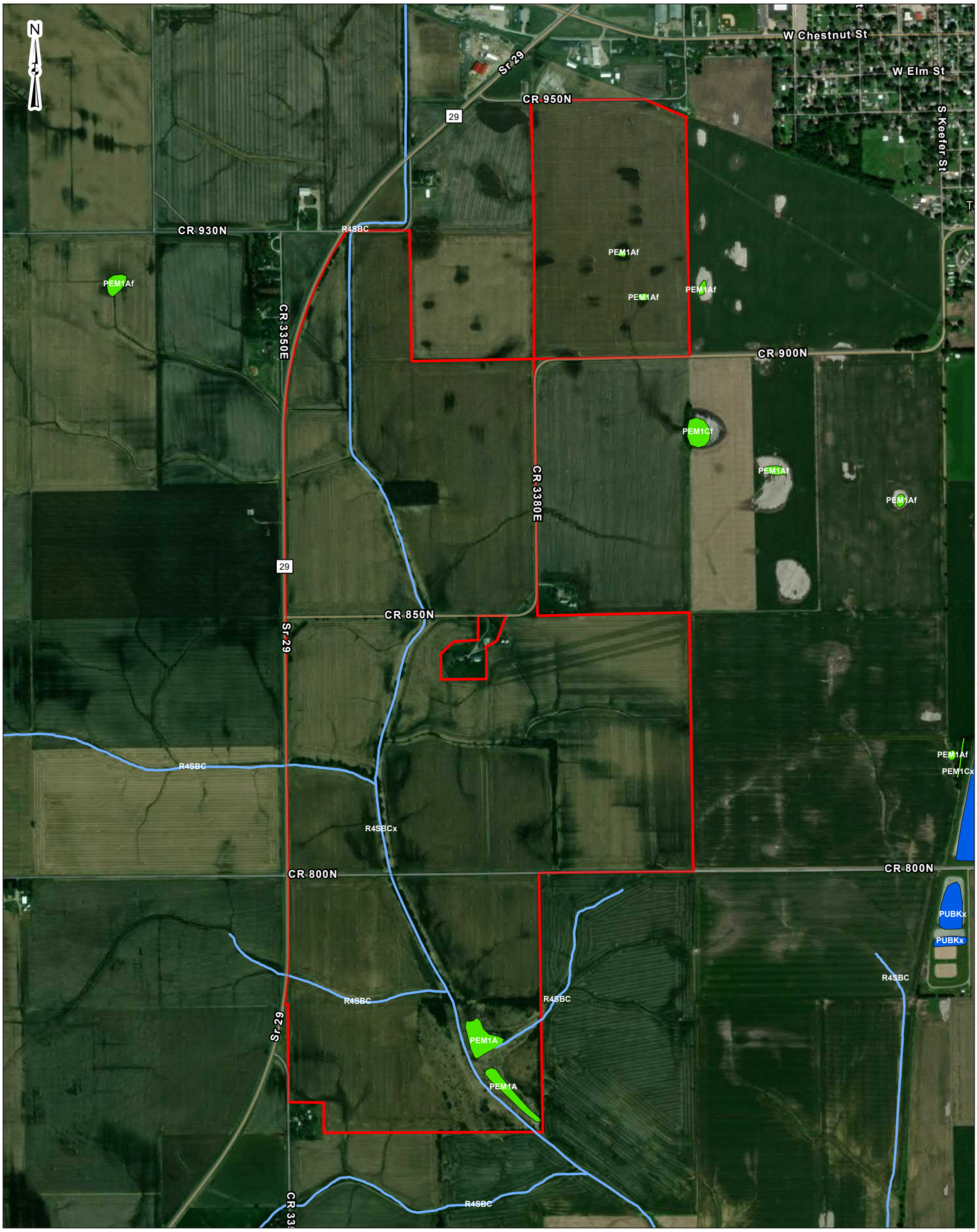
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

USGS Topographic Map

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

1



Project No.:	N12127167
Date:	May 2021
Drawn By:	MDP
Reviewed By:	SEW

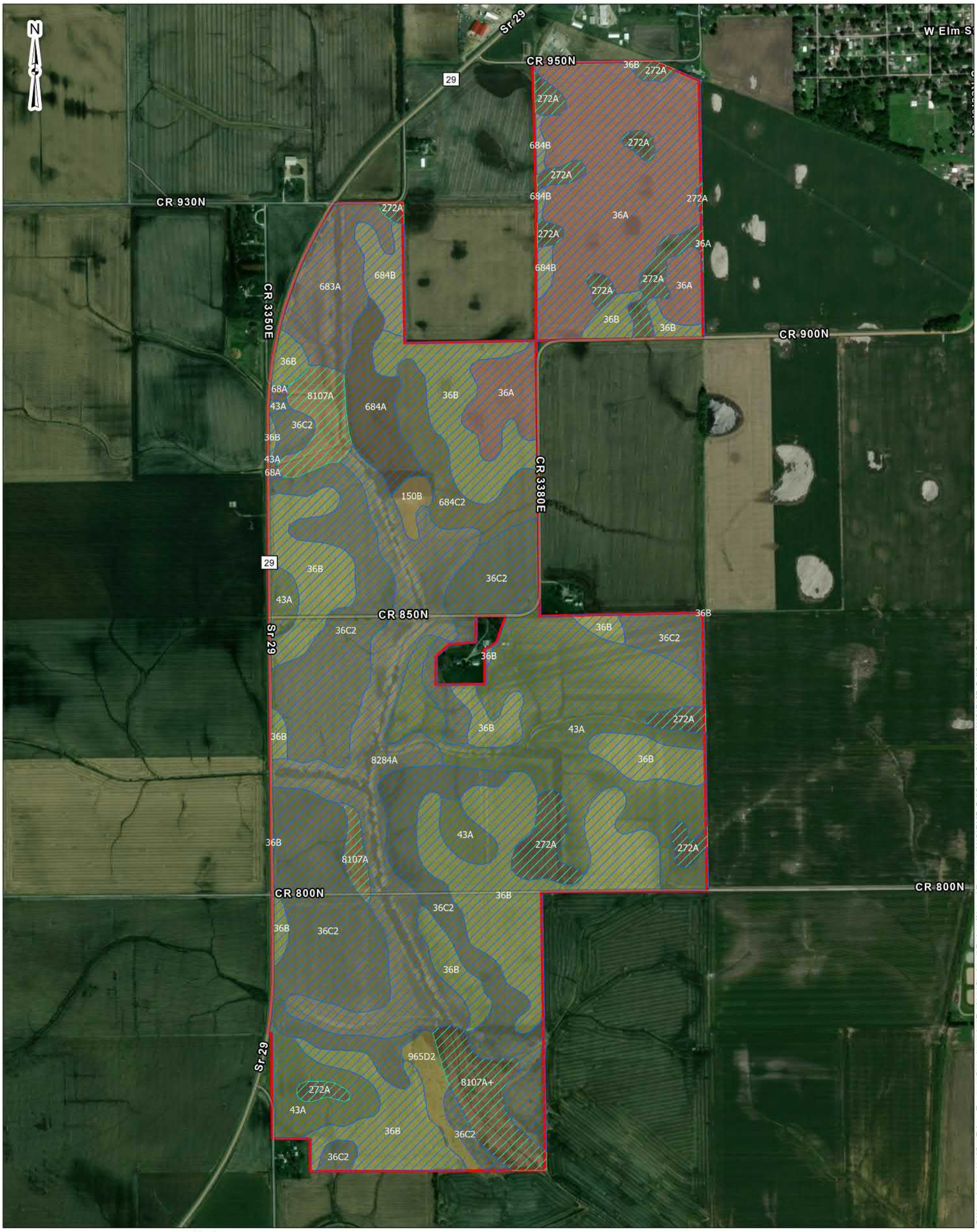
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

National Wetlands Inventory Map

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

2



Feet

0 475 950 1,900

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project Site Boundary

Hydric Soils

- Partially Hydric (1-25%)
- Partially Hydric (76-95%)

Soil Map Unit

- 150B,Onarga sandy loam, 2 to 5 percent slopes
- 272A,Edgington silt loam, 0 to 2 percent slopes
- 36A,Tama silt loam, 0 to 2 percent slopes
- 36B,Tama silt loam, 2 to 5 percent slopes
- 36C2,Tama silt loam, 5 to 10 percent slopes, eroded
- 43A,Ipava silt loam, 0 to 2 percent slopes
- 683A,Lawndale silt loam, 0 to 2 percent slopes
- 684A,Broadwell silt loam, 0 to 2 percent slopes
- 684B,Broadwell silt loam, 2 to 5 percent slopes
- 684C2,Broadwell silt loam, 5 to 10 percent slopes, eroded
- 68A,Sable silty clay loam, 0 to 2 percent slopes
- 8107A,Sawmill silty clay loam, 0 to 2 percent slopes, occasionally flooded
- 8107A+,Sawmill silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
- 8284A,Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded
- 965D2,Tallula-Bold silt loams, 10 to 18 percent slopes, eroded

Project No.:	N12127167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

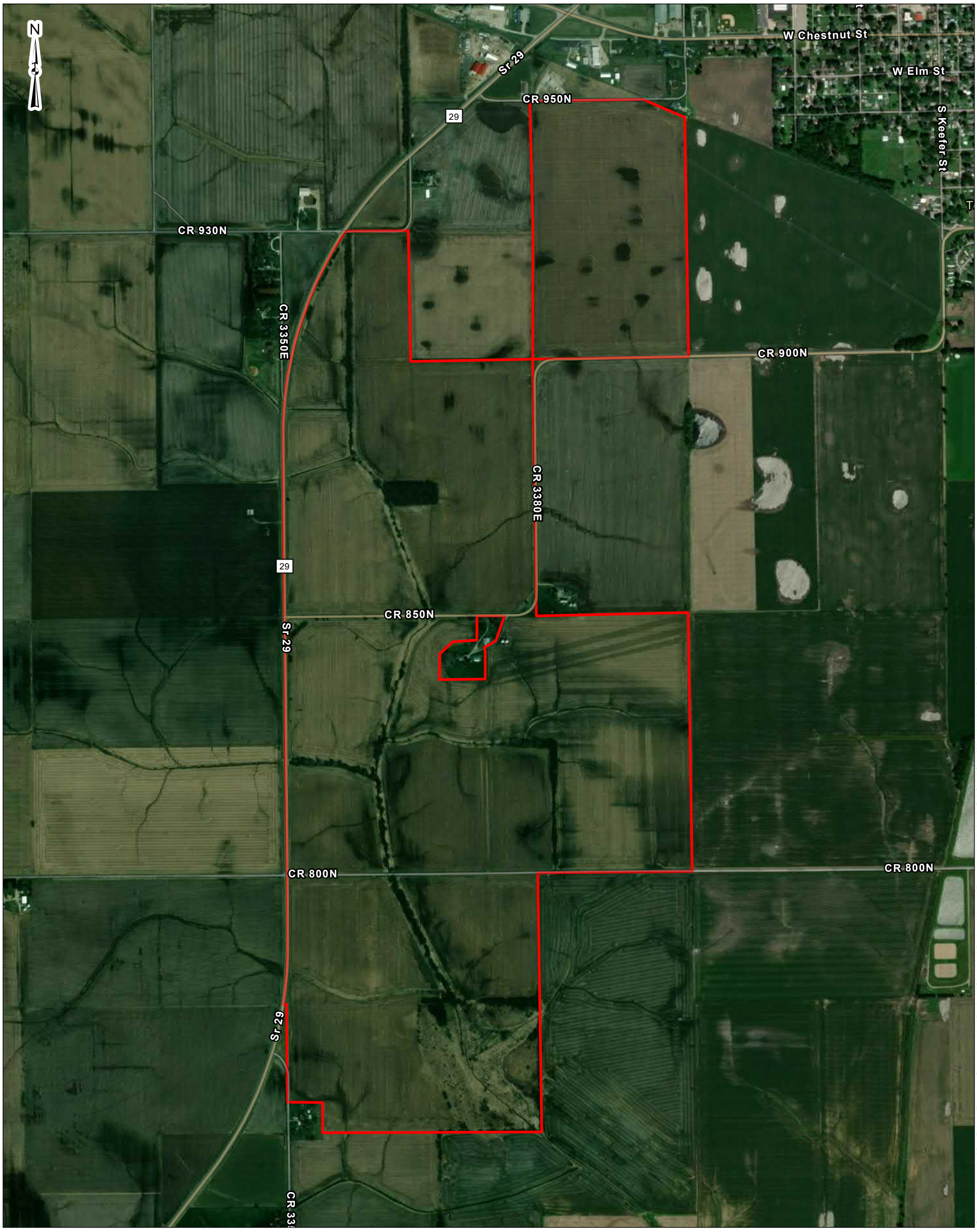
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

SSURGO Soils Map

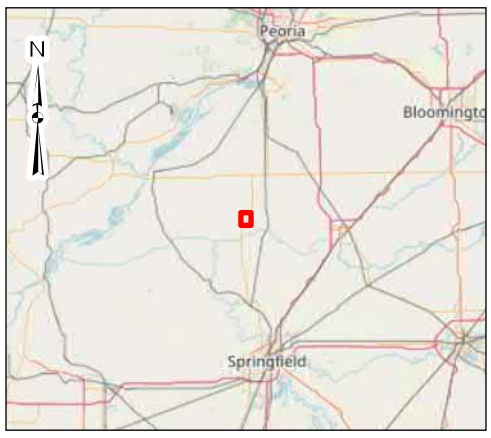
Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

3



DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap



Project No.:	N12127167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

Aerial Image (2019)

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

4

Project No.:	N12127167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

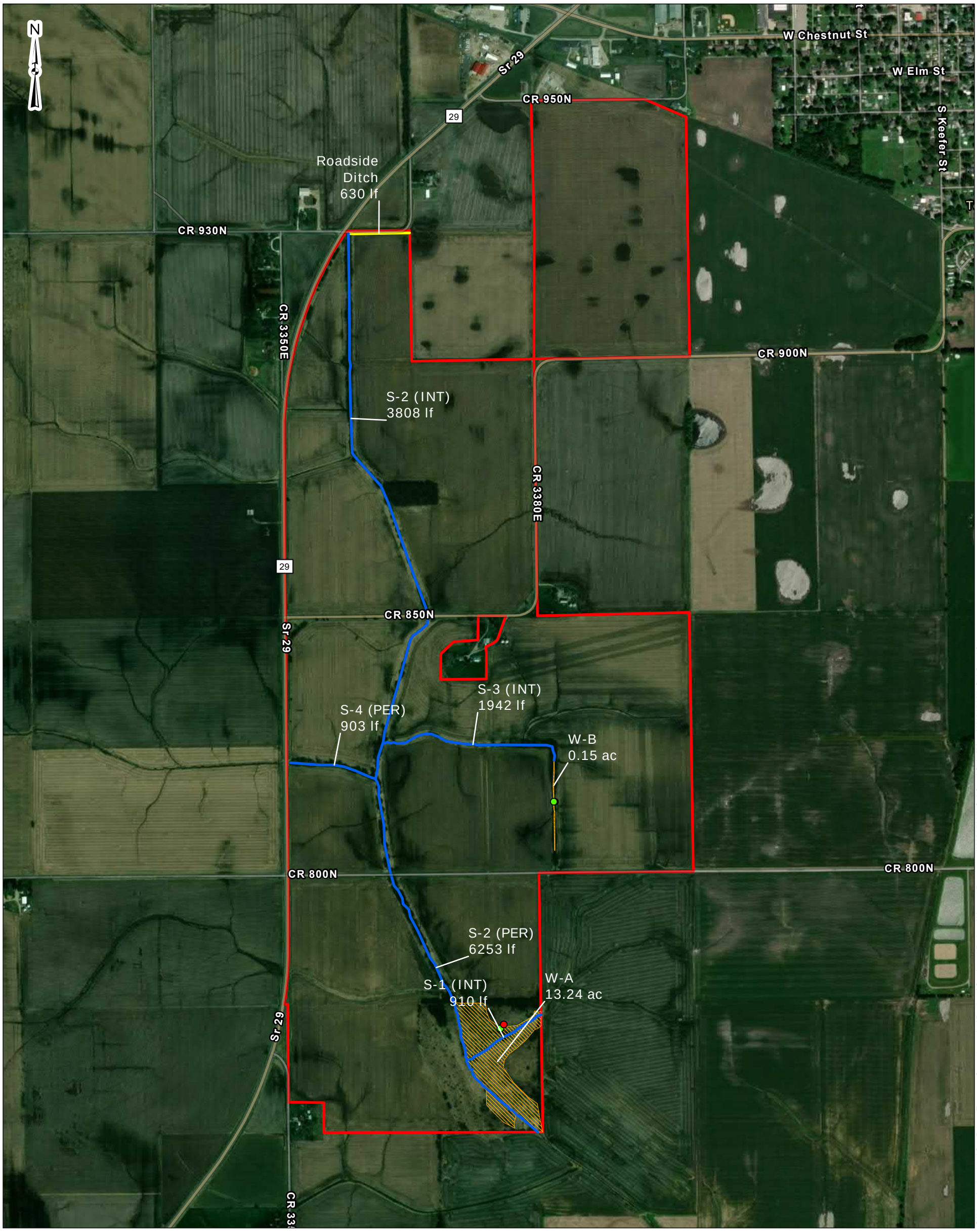
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

FEMA Flood Hazard Zone Map

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

5



Project No.:	N1217167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

Wetland Delineation Map

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

6

APPENDIX B – GROUND PHOTOGRAPHS

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 1 **Date:** April 19, 2021 **Direction:** West **Description:** Stream 1 (Int) entering the Project site into Wetland A.	

Photograph No. 2 **Date:** April 19, 2021 **Direction:** Northwest **Description:** Wetland A	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 3 **Date:** April 19, 2021 **Direction:** Northwest **Description:** Stream 2 (Per) near the southeastern corner of the Project Site	

Photograph No. 4 **Date:** April 19, 2021 **Direction:** East **Description:** Overall view of Streams 1 and 2 and Wetland A complex from a highpoint west of the features.	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 5 **Date:** April 19, 2021 **Direction:** North **Description:** Wetland B, which appears to be an unmaintained agricultural ditch that has become a wetland.	

Photograph No. 6 **Date:** April 19, 2021 **Direction:** North **Description:** Transition from Wetland B in foreground to Stream 3 (Int) in mid and background	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 7 **Date:** April 19, 2021 **Direction:** West **Description:** Typical grassed waterway on the Project Site. This feature is shown as an intermittent stream on the USGS topographic map.	

Photograph No. 8 **Date:** April 19, 2021 **Direction:** Northwest **Description:** Stream 4 (Per)	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 9 **Date:** April 19, 2021 **Direction:** Southeast **Description:** Confluence of Streams 2 (left) and 4 (right)	

Photograph No. 10 **Date:** April 19, 2021 **Direction:** North **Description:** Intermittent portion of Stream 2 (center and right) at confluence with an agricultural ditch (left)	

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 11 **Date:** April 19, 2021 **Direction:** East **Description:** Confluence of roadside ditch (left) with ephemeral portion of Stream 2 (right) where it enters the Project Site.	

Photograph No. 12 **Date:** April 19, 2021 **Direction:** Southeast **Description:** A typical view of the forested area in the central portion of the Project Site.	

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 13 **Date:** April 19, 2021 **Direction:** West **Description:** An agricultural drain/grassed, erosion control feature at confluence with intermittent portion of Stream 2 in the northern half of the Project Site.	

Photograph No. 14 **Date:** April 19, 2021 **Direction:** Southeast **Description:** A typical view of the agricultural uplands in the western portion of the Project Site.	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Azimuth Renewables, LLC	**Project Number:**	N1217167
Location:	Salt Creek Solar Site	**Photographer**:	M. Perkins

Photograph No. 15 **Date:** April 19, 2021 **Direction:** West **Description:** A typical view of shrub-scrub uplands in the southeastern portion of the Project Site.	

Photograph No. 16 **Date:** April 19, 2021 **Direction:** Northwest **Description:** Another view of shrub-scrub uplands in the southeastern portion of the Project Site.	

APPENDIX C – DATA SHEETS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Salt Creek Solar City/County: Mason City/Mason Sampling Date: 04/19/2021

Applicant/Owner: Azimuth Energy State: IL Sampling Point: WA SP01

Investigator(s): Michael Perkins Section, Township, Range: _____

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave

Slope (%): _____ Lat: 40.174277735 Long: -89.718449165 Datum: NAD83

Soil Map Unit Name: Sawmill silt loam, 0 to 2 percent slopes, occasionally flooded, overwasl NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

This wetland receives water from S-1 and S-2 flooding, direct precipitation, OLF, and groundwater. Wetland is drained by S-2, a perennial stream. PEM. WOTUS.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	35	Y	OBL
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris arundinaceae	75	Y	FACW
2. Typha angustifolia	25	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WA SP0

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					silty loam	
4-14	10YR 3/2	70	7.5YR 5/8	30	C	M	loamy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 7"

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 3"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Salt Creek Solar City/County: Mason City/Mason Sampling Date: 04/19/2021

Applicant/Owner: Azimuth Energy State: IL Sampling Point: WB SP01

Investigator(s): Michael Perkins Section, Township, Range:

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): flat

Slope (%): _____ Lat: 40.180679366 Long: -89.716441379 Datum: NAD83

Soil Map Unit Name: Edgington silt loam, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

This wetland appears to be the result of an unmaintained agricultural ditch. This wetland receives water from direct precipitation, OLF, and groundwater. PEM/PFO WOTUS.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	85	Y	FAC
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris arundinaceae	75	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	75	x 2 =	150
FAC species	85	x 3 =	255
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	160 (A)		405 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WB SP0

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	80	7.5YR 5/8	20	C	M, PL	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 6

Water Table Present? Yes X No _____ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Likely meant to be an agricultural drainage ditch, but large mature trees have led to low flow through the channel and to wetland formation

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Salt Creek Solar City/County: Mason City/Mason Sampling Date: 04/19/2021

Applicant/Owner: Azimuth Energy State: IL Sampling Point: UP01

Investigator(s): Michael Perkins Section, Township, Range:

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave

Slope (%): _____ Lat: 40.174390322 Long: -89.7183250073 Datum: NAD83

Soil Map Unit Name: Tama silt loam, 5 to 10 percent slopes, eroded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:
This is the upland data point for W-A. .

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Solidago canadensis	60	Y	FACU
2. Rubus alumnus	20	Y	FACU
3. Rosa multiflora	5	N	FACU
4. Lonicera mackii	15	N	NL
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	85	x 4 =	340
UPL species	_____	x 5 =	_____
Column Totals:	85 (A)		340 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/4	90					clay loam	
	10YR 3/3	10						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Salt Creek Solar City/County: Mason City/Mason Sampling Date: 04/19/2021

Applicant/Owner: Azimuth Energy State: IL Sampling Point: UP02

Investigator(s): Michael Perkins Section, Township, Range:

Landform (hillslope, terrace, etc.): edge of flat agr field Local relief (concave, convex, none): none

Slope (%): Lat: 40.1806769172 Long: -89.7183250073 Datum: NAD83

Soil Map Unit Name: Edgington silt loam, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	
Hydric Soil Present?	Yes	No X	**Is the Sampled Area within a Wetland?** Yes No X
Wetland Hydrology Present?	Yes	No X	

Remarks:
This is the upland data point for W-B. .

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Solidago canadensis	20	Y	FACU
2. Phalaris arundinacea	80	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	80	x 2 =	160
FAC species		x 3 =	
FACU species	20	x 4 =	80
UPL species		x 5 =	
Column Totals:	100 (A)		240 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Phalaris is present along transition from upland agricultural field to the unmaintained agricultural ditch that is W-B.

SOIL

Sampling Point: UP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2	100					silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

Applicant:
Mr. David Bunge,
Azimuth Renewables, LLC
4240 Duncan Avenue, Suite 200
St. Louis, Missouri 63110

Consultant:
Michael Perkins
Terracon Consultants, Inc
611 Lunken Park Drive
Cincinnati, OH 45226

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 05/24/2021

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: U.S. Army Corps of Engineers, Rock Island

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: IL County/parish/borough: Mason City: Mason City

Center coordinates of site (lat/long in degree decimal format):

Lat.: 40.1840545 Long.: -89.7917093

Universal Transverse Mercator:

Name of nearest waterbody: Salt Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
W-A	40.1733415532943	-89.7185570175461	13.24 ac	Wetland	Section 404
W-B	40.1805648033845	-89.7164313170643	0.15 ac	Wetland	Section 404
S-1 (INT)	40.1740179493744	-89.7183200689371	910 lf	Non-Wetland	Section 404
S-2 (INT)	40.1916066103432	-89.7232692231599	3,808 lf	Non-Wetland	Section 404
S-2 (PER)	40.1785832759894	-89.7211171091589	6,253 lf	Non-Wetland	Section 404
S-3 (INT)	40.1823468818534	-89.7194368404637	1,942 lf	Non-Wetland	Section 404
S-4 (INT)	40.1816709489	-89.72455099	903 lf	Non-Wetland	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

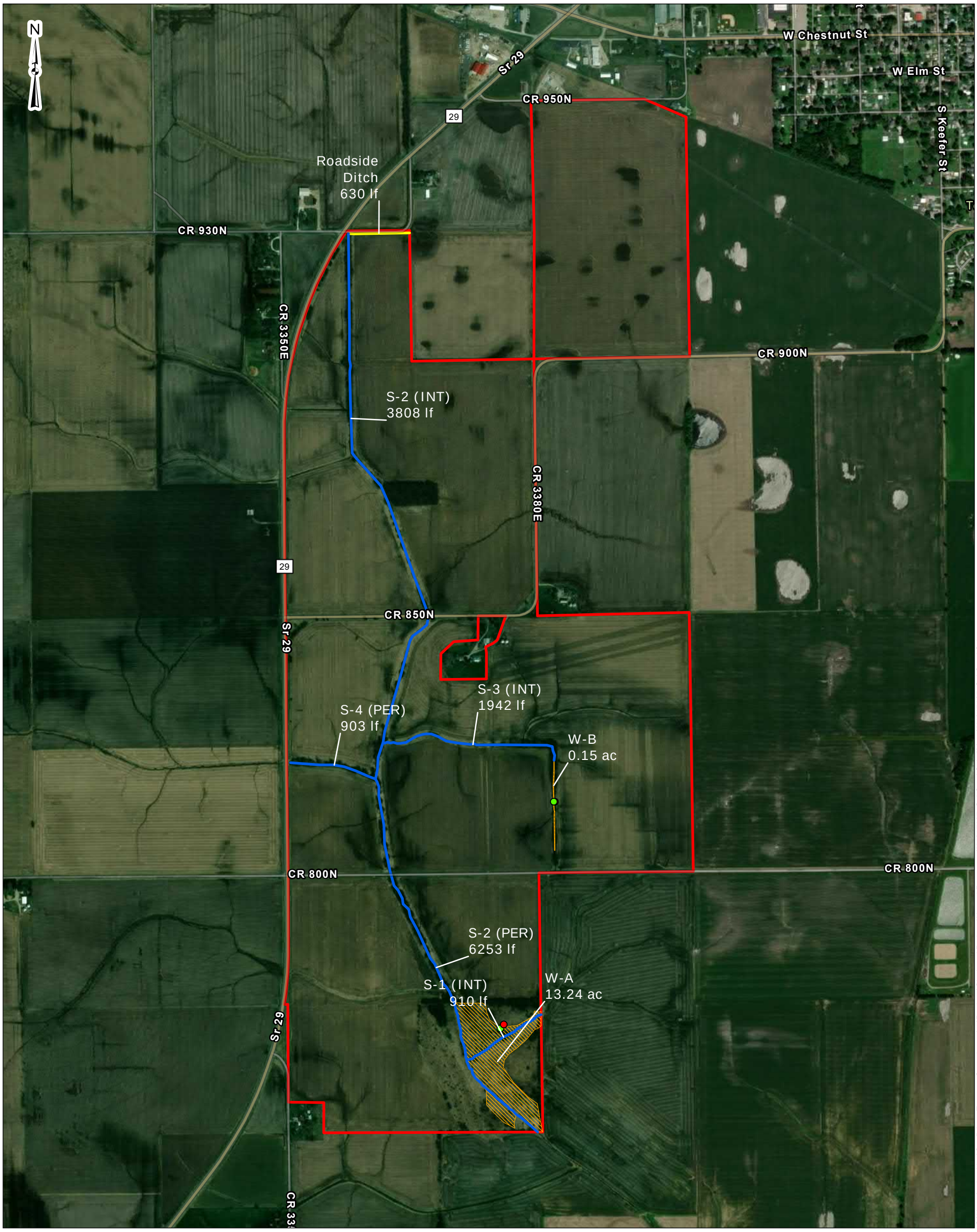
Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: Terracon Wetland Delineation; Ex. 1-5, 05/07/2021, .
- [x] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _____.
- [ ] Data sheets prepared by the Corps: _____.
- [ ] Corps navigable waters' study: _____.
- [ ] U.S. Geological Survey Hydrologic Atlas: _____.
  - [ ] USGS NHD data.
  - [ ] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: 1:24k; Mason City, IL 7.5' Quadrangle; Terracon Wetland Delineation, Ex. 1, 05/07/2021.
- [x] Natural Resources Conservation Service Soil Survey. Citation: Terracon Wetland Delineation, Exhibit 3, 05/07/2021.
- [x] National wetlands inventory map(s). Cite name: Terracon Wetland Delineation, Exhibit 2, 05/07/2021.
- [ ] State/local wetland inventory map(s): _____.
- [x] FEMA/FIRM maps: Terracon Wetland Delineation, Exhibit 5, 05/07/2021.
- [ ] 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): Terracon Wetland Delineation, Exhibit 4, 05/07/2021.
  or [x] Other (Name & Date): Photolog, Terracon Wetland Delineation, 05/07/2021.
- [ ] Previous determination(s). File no. and date of response letter: _____.
- [x] Other information (please specify): Terracon Wetland Delineation, 05/07/2021, Attached.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____	Perkins, Michael D Digitally signed by Perkins, Michael D DN: cn=Perkins, Michael D, ou=General Users, email=Michael.Perkins@terracon.com Date: 2021.07.15 17:07:44 -04'00'
Signature and date of Regulatory staff member completing PJD	Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.



Project No.:	N1217167
Date:	Apr 2021
Drawn By:	MDP
Reviewed By:	SEW

Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH. (513) 321-5816 terracon.com

Wetland Delineation Map

Azimuth Renewables, LLC
Salt Creek Solar Site
Highway 29
Mason City, Mason County, Illinois

Exhibit

6

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ROCK ISLAND DISTRICT
PO BOX 2004 CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61204-2004

REPLY TO
ATTENTION OF

July 15, 2021

Operations Division

SUBJECT: CEMVR-RD-2021-0784

Mr. David Bunge,
Azimuth Renewables, LLC
4240 Duncan Avenue, Suite 200
St. Louis, Missouri 63110
david@azimuth.energy.com

Dear Mr. Bunge:

Our office has reviewed your application received May 24, 2021, concerning the proposed request for a preliminary jurisdictional determination for the Salt Creek Solar site located in Section 16, Township 20 North, Range 6 West, Mason County, Illinois.

Our office concurs with the Preliminary Jurisdictional Determination completed by Terracon Consultants, Inc. concerning your project area. A copy of the jurisdictional determination is enclosed. A Preliminary Jurisdictional Determination is not appealable, and it is applicable only to the permit program administered by the Corps of Engineers. **We have reviewed, signed, and dated the form and you may keep of a copy of it for your records.**

This Preliminary Jurisdictional Determination outlines what areas the Corps regulates under Section 404 of the Clean Water Act. If your client's proposed project will require authorization from this office, please provide this office your application and plans for the site. We will need this information to determine the permit needs for the project.

Should you have any questions, please contact our Regulatory Division by letter, or contact me by phone: 309/794-5373, or email: james.c.kelley@usace.army.mil.

Sincerely,

James C. Kelley
Project Manager
Eastern Branch
Regulatory Division

Copies Furnished:

w/o enclosures:

Mr. William Milner, P.E.
Section Chief - Downstate Regulatory Programs
Illinois Department of Natural Resources
Office of Water Resources
1 Natural Resources Way
Springfield, IL 62702
bill.milner@illinois.gov (email copy)

Mr. Darin LeCrone, P.E.
Manager, Permit Section, 15
Division of Water Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
PO Box 19276
Springfield, Illinois 62794-9276
darin.lecrone@Illinois.gov (email copy)

Mr. Michael Perkins
Terracon Consultants, Inc
611 Lunken Park Drive
Cincinnati, OH 45226
michael.perkins@terracon.com (email copy)

Appendix D

Soil Report

United States Department of Agriculture

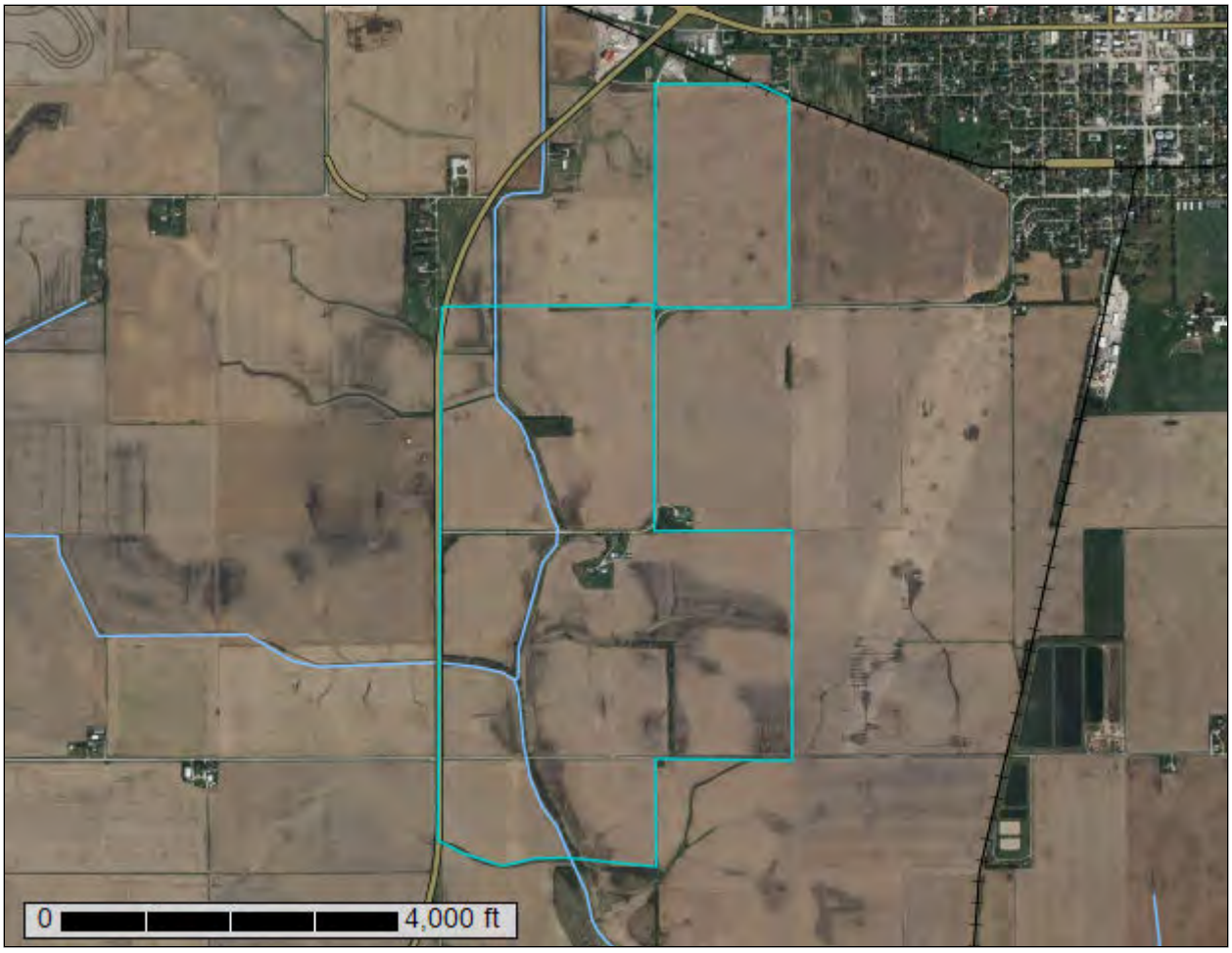
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Mason County, Illinois

Salt Creek Township Solar Project Area



September 8, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

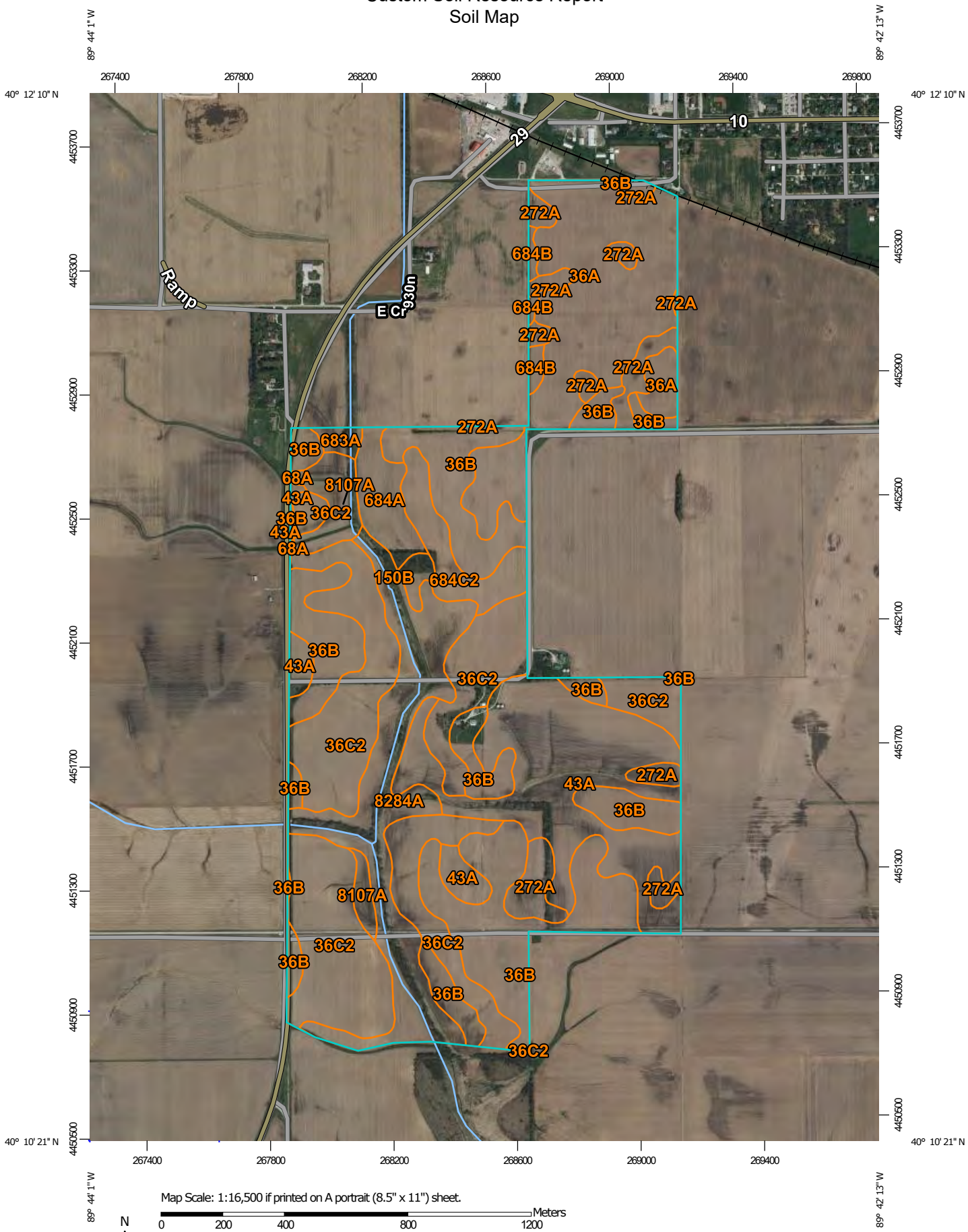
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:16,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Mason County, Illinois
Survey Area Data: Version 15, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 13, 2021—Apr 26, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
36A	Tama silt loam, 0 to 2 percent slopes	82.7	14.3%
36B	Tama silt loam, 2 to 5 percent slopes	126.0	21.8%
36C2	Tama silt loam, 5 to 10 percent slopes, eroded	134.6	23.3%
43A	Ipava silt loam, 0 to 2 percent slopes	88.3	15.3%
68A	Sable silty clay loam, 0 to 2 percent slopes	0.7	0.1%
150B	Onarga sandy loam, 2 to 5 percent slopes	3.1	0.5%
272A	Edgington silt loam, 0 to 2 percent slopes	27.4	4.7%
683A	Lawndale silt loam, 0 to 2 percent slopes	2.9	0.5%
684A	Broadwell silt loam, 0 to 2 percent slopes	13.6	2.4%
684B	Broadwell silt loam, 2 to 5 percent slopes	3.3	0.6%
684C2	Broadwell silt loam, 5 to 10 percent slopes, eroded	17.0	2.9%
8107A	Sawmill silty clay loam, 0 to 2 percent slopes, occasionally flooded	14.0	2.4%
8284A	Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded	64.3	11.1%
Totals for Area of Interest		**578.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without

including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Mason County, Illinois

36A—Tama silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5z06
Elevation: 590 to 930 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tama and similar soils: 94 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tama

Setting

Landform: Flats on ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 58 inches: silty clay loam
H3 - 58 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope

Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

36B—Tama silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 5z07
Elevation: 590 to 930 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tama and similar soils: 95 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tama

Setting

Landform: Knolls on ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crested hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 58 inches: silty clay loam
H3 - 58 to 80 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

36C2—Tama silt loam, 5 to 10 percent slopes, eroded

Map Unit Setting

National map unit symbol: 5z08
Elevation: 340 to 1,020 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tama and similar soils: 95 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tama

Setting

Landform: Hillslopes on ground moraines
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Head slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 30 inches: silty clay loam
H3 - 30 to 60 inches: silt loam

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R115CY004IL - Loess Upland Savanna
Hydric soil rating: No

Minor Components

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Sable

Percent of map unit:
Landform: Drainageways, swales
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

43A—Ipava silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2rmnj
Elevation: 420 to 870 feet
Mean annual precipitation: 36 to 42 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 160 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ipava and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ipava

Setting

Landform: Ground moraines

Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 10 inches: silt loam
A - 10 to 18 inches: silty clay loam
Btg1 - 18 to 31 inches: silty clay loam
Btg2 - 31 to 50 inches: silty clay loam
Cg - 50 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C/D
Ecological site: R108BY008IL - Wet Loess Upland Prairie
Hydric soil rating: No

Minor Components

Virden

Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Sable

Percent of map unit: 5 percent
Landform: Swales
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Denny

Percent of map unit: 5 percent
Landform: Depressions

Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

68A—Sable silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tjpl
Elevation: 640 to 1,130 feet
Mean annual precipitation: 30 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Sable and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sable

Setting

Landform: Swales
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loess

Typical profile

Ap - 0 to 23 inches: silty clay loam
Btg1 - 23 to 38 inches: silty clay loam
Btg2 - 38 to 47 inches: silt loam
Cg - 47 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Minor Components

Muscatune
Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ipava
Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108BY008IL - Wet Loess Upland Prairie
Hydric soil rating: No

Buckhart
Percent of map unit: 3 percent
Landform: Knolls
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Elburn
Percent of map unit: 2 percent
Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

150B—Onarga sandy loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 5yz5
Elevation: 460 to 820 feet
Mean annual precipitation: 29 to 45 inches
Mean annual air temperature: 49 to 56 degrees F

Frost-free period: 160 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Onarga and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Onarga

Setting
Landform: Outwash plains, stream terraces
Landform position (two-dimensional): Summit
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Outwash or eolian deposits

Typical profile
H1 - 0 to 19 inches: sandy loam
H2 - 19 to 32 inches: sandy loam
H3 - 32 to 60 inches: stratified sand to sandy loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: R115CY011IL - Sand Prairie
Hydric soil rating: No

272A—Edgington silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 5yzq
Elevation: 590 to 930 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Edgington and similar soils: 90 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edgington

Setting

Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Loess

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 31 inches: silt loam
H3 - 31 to 55 inches: silty clay loam
H4 - 55 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very high (about 12.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

683A—Lawndale silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5z0s
Elevation: 340 to 950 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lawndale and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawndale

Setting

Landform: Ground moraines, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over eolian sands

Typical profile

H1 - 0 to 18 inches: silt loam
H2 - 18 to 44 inches: silty clay loam
H3 - 44 to 52 inches: fine sandy loam
H4 - 52 to 80 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B/D
Ecological site: R108BY008IL - Wet Loess Upland Prairie
Hydric soil rating: No

Minor Components

Sable

Percent of map unit: 2 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Brooklyn

Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Knight

Percent of map unit: 1 percent
Landform: Depressions

Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R108BY008IL - Wet Loess Upland Prairie
Hydric soil rating: Yes

Edgington

Percent of map unit: 1 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

684A—Broadwell silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5z0t
Elevation: 590 to 1,000 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Broadwell and similar soils: 90 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Broadwell

Setting

Landform: Ground moraines, flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over eolian sands

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 50 inches: silty clay loam
H3 - 50 to 55 inches: fine sandy loam
H4 - 55 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: R108BY005IL - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

684B—Broadwell silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 5z0v
Elevation: 510 to 1,000 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Broadwell and similar soils: 90 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Broadwell

Setting

Landform: Knolls, low hills, outwash plains, upland slopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess over eolian sands

Typical profile

H1 - 0 to 15 inches: silt loam
H2 - 15 to 50 inches: silty clay loam
H3 - 50 to 55 inches: fine sandy loam
H4 - 55 to 80 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: R108BY005IL - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Drummer

Percent of map unit: 5 percent
Landform: Swales on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

684C2—Broadwell silt loam, 5 to 10 percent slopes, eroded

Map Unit Setting

National map unit symbol: 5z0w
Elevation: 590 to 930 feet

Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Broadwell and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Broadwell

Setting

Landform: Outwash plains, knolls, low hills, upland slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Loess over eolian sands

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 46 inches: silty clay loam
H3 - 46 to 49 inches: fine sandy loam
H4 - 49 to 60 inches: loamy sand

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R108BY005IL - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Edgington

Percent of map unit: 2 percent
Landform: Ground moraines, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

8107A—Sawmill silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2w1z6
Elevation: 420 to 900 feet
Mean annual precipitation: 36 to 38 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 170 to 188 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Sawmill, occasionally flooded, and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sawmill, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 9 inches: silty clay loam
A - 9 to 30 inches: silty clay loam
Bg - 30 to 54 inches: silty clay loam
Cg - 54 to 79 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D

Ecological site: F108BY021IL - Wet Loamy Floodplain Forest, R115CY016IL - Ponded Floodplain Marsh, R110XY027IL - Ponded Floodplain Marsh, R108AY018IL - Ponded Floodplain Marsh
Hydric soil rating: Yes

Minor Components

Lawson, occasionally flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ross, occasionally flooded
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Radford, occasionally flooded
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

8284A—Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting
National map unit symbol: 5z15
Elevation: 340 to 1,020 feet
Mean annual precipitation: 32 to 45 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 160 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Tice and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tice

Setting
Landform: Flood plains
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 14 inches: silty clay loam
H2 - 14 to 80 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F115CY020IL - Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Sawmill

Percent of map unit: 5 percent
Landform: Swales on flood plains
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F108BY021IL - Wet Loamy Floodplain Forest, R115CY018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Beaucoup

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115CY018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

Ambraw

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Flat
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R115CY018IL - Wet Floodplain Sedge Meadow
Hydric soil rating: Yes

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Appendix E

Construction Plans

January 2023

SOLAR PV ELECTRICAL SYSTEM INSTALLATION DRAWINGS

SALT CREEK SOLAR

MASON CITY, IL 62664
40.183287°, -89.720427°

GENERAL NOTES

SCOPE OF WORK

THE INSTALLATION OF A SOLAR PHOTOVOLTAIC (PV) PLANT INCLUDING PV MODULES, GRID-INTERACTIVE INVERTERS & SINGLE AXIS TRACKERS TO SUPPLY POWER DIRECTLY TO THE LOCAL ELECTRIC UTILITY GRID.

PROJECT LOCATION

MASON CITY, IL 62664
40.183287°, -89.720427°

INTERCONNECTION

THE PV SYSTEM WILL OPERATE IN PARALLEL WITH THE ELECTRIC UTILITY SERVICE PROVIDER. THE INVERTERS PROVIDE ANTI-ISLANDING PROTECTION AS WELL AS HARMONIC LIMITS THAT COMPLY WITH UL 1741, IEEE 1547 AND IEEE 519.

OPERATION

PERMISSION TO OPERATE THE PV SYSTEM IS NOT AUTHORIZED UNTIL FINAL INSPECTIONS AND APPROVALS ARE OBTAINED FROM THE AUTHORITY HAVING JURISDICTION AND THE ELECTRIC UTILITY SERVICE PROVIDER.

HOLD

CODE ENFORCED

2008 CURRENTLY ENFORCED, 2020 REQUESTED FOR PROJECT ENFORCEMENT
NATIONAL ELECTRICAL CODE, 2020 EDITION

AUTHORITY HAVING JURISDICTION

COUNTY OF MASON

ELECTRIC UTILITY SERVICE PROVIDER

AMEREN

APN

2007300001, 1913200001, 1913400001, 2018300001, & 1924200001

PROJECT TEAM

ELECTRICAL ENGINEER

STELLAVISE INC.
BRICE CASEBEER, PE - LICENSE #: TBD
2535 CAMINO DEL RIO S, SUITE 235
SAN DIEGO, CA 92108

CIVIL ENGINEER

KIMLEY-HORN & ASSOCIATES, INC.
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RACKING MANUFACTURER

ARRAY TECHNOLOGIES, INC.
3901 MIDWAY PLACE NE
ALBUQUERQUE, NM 87109

CONTRACTOR

MK SOLAR OPERATIONS, LLC
2330 W SCOTT PLACE
DENVER, CO 80211

SOLAR SYSTEM OWNER

BIRCH CREEK DEVELOPMENT, LLC
880 APOLLO STREET, SUITE 333
EL SEGUNDO, CA 90245

COUNTY MAP

SOURCE: GISGEOGRAPHY.COM

VICINITY MAP

SOURCE: GOOGLE EARTH

PROJECT DETAILS

SYSTEM SUMMARY

DC SYSTEM SIZE	69.7 MW
AC SYSTEM SIZE	51.0 MW
POI CAPACITY LIMIT	50 MW
DC / AC RATIO	1.37
DC VOLTAGE	1,500 V
POCC / POI VOLTAGE	34.5 KV

PV MODULES

MANUFACTURER	HYPERION SOLAR
MODEL	HY-DH144P8
DC POWER @ STC	535 W | 540 W
MODULES PER STRING	26
TOTAL STRINGS	776 | 4,195
TOTAL MODULES	20,176 | 109,070

INVERTERS / PCS

MANUFACTURER	SUNGROW
MODEL	SG3600UD-MV
AC POWER RATING	3,600 KVA
TOTAL INVERTERS	16

RACKING

MANUFACTURER	ATI
MODEL / TYPE	V3
PITCH	24'-9"
INTER-ROW SPACING	17'-4"
GCR	30.1%
MAX TRACKER ROTATION	±52°
AZIMUTH	180°

CONTRACTOR

BIRCH CREEK

BIRCH CREEK DEVELOPMENT, LLC
880 APOLLO STREET, SUITE 333
EL SEGUNDO, CA 90245

PROJECT

SALT CREEK

MASON CITY, IL 62664
40.183287°, -89.720427°

ENGINEER

STELLAVISE
SOLAR ENGINEERING

2535 CAMINO DEL RIO S, STE. 235
SAN DIEGO, CA 92108

WWW.STELLAVISE.COM (619) 205-5038

SEAL

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#	DESCRIPTION	DATE
A	10% DESIGN	09/02/2022

NOT FOR CONSTRUCTION
SEPTEMBER 02, 2022

SALT CREEK SOLAR
MASON CITY, IL 62664

SHEET TITLE

COVER SHEET

SHEET NO.

E-001

ABBREVIATIONS:

A, AMP	AMPERAGE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CENTERLINE
COU	CONDITIONS OF USE
CTR	CENTER
CU	COPPER
DAS	DATA ACQUISITION SYSTEM
DC	DIRECT CURRENT
DEMO	DEMOLITION
DIA, Ø	DIAMETER
DISC	DISCONNECT
DS	DISCONNECT SWITCH
DTL	DETAIL
DWG	DRAWING
EA	EACH
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEV	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENGR	ENGINEER
EOR	ENGINEER OF RECORD
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
(E)	EXISTING
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HZ	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
INV	INVERTER
JB	JUNCTION BOX
KAIC	1,000 AMPS INTERRUPT CAPACITY
KCMIL	1,000 CIRCULAR MILLS
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LBD	LOAD-BREAK DISCONNECT
LSIG	LONG, SHORT, INSTANT., & GROUND FAULT
LTG	LIGHTING
LV	LOW VOLTAGE
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUG ONLY
MLPE	MODULE LEVEL POWER ELECTRONICS
MPPT	MAXIMUM POWER POINT TRACKER
MTR	METER
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEMA	NAT'L ELECTRICAL MANUFACTURERS ASSOCIATION
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OAE	OR APPROVED EQUAL
P	POLE
PF	POWER FACTOR
PH, ϕ	PHASE
PNL	PANEL
POA	PLANE OF ARRAY
POI	POINT OF INTERCONNECTION
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE
PVDS	PV DISCONNECT SWITCH
PWR	POWER
QTY	QUANTITY
REF	REFERENCE
RMC,RGS	GALVANIZED RIGID STEEL CONDUIT
SCH_40	SCHEDULE 40
SCH_80	SCHEDULE 80
SEC	SECONDARY
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
SSBJ	SUPPLY-SIDE BONDING JUMPER
SWBD	SWITCHBOARD
SYS	SYSTEM
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER

SYMBOL LEGEND:

- KEYED NOTE
- EQUIPMENT SPECIFICATION
- CIRCUIT BREAKER
- SWITCH, SINGLE-THROW
- SWITCH, DOUBLE THROW
- SWITCH, TRIPLE THROW
- SWITCH, T-BLADE
- FUSE
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- SURGE ARRESTOR
- CABLE LIMITER
- MODULE CONNECTOR PAIR
- POWER TRANSFORMER
- ZIG-ZAG TRANSFORMER
- DELTA
- WYE
- WYE-GROUNDED
- INVERTER
- PHOTOVOLTAIC MODULE
- PYRANOMETER
- BACK-OF-MODULE TEMP. SENSOR
- AMBIENT TEMPERATURE SENSOR
- ALBEDOMETER
- ANEMOMETER
- SNOW DEPTH SENSOR
- FAULT INDICATOR
- METER
- ELEVATION CALLOUT, EXTERIOR
- ELEVATION CALLOUT, INTERIOR
- SECTION VIEW CALLOUT
- DETAIL VIEW CALLOUT

SHEET INDEX

CONTRACTOR

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PROJECT

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E-002

GENERAL:

1. CONTRACTOR SHALL PROVIDE A COMPLETE WORKING ELECTRICAL INSTALLATION WITH ALL EQUIPMENT CALLED FOR IN PROPER OPERATING CONDITION. DOCUMENTS DO NOT UNDERTAKE TO SHOW OR LIST EVERY ITEM TO BE PROVIDED. WHEN AN ITEM NOT SHOWN OR LISTED IS CLEARLY NECESSARY FOR PROPER OPERATION OF EQUIPMENT SHOWN OR LISTED, PROVIDE THE ITEM WHICH WILL ALLOW THE SYSTEM TO FUNCTION PROPERLY.
2. CODE COMPLIANCE: COMPLY WITH ALL RELEVANT CODES, LAWS, RULES, REGULATIONS, AND STANDARDS OF APPLICABLE CODE-ENFORCING AUTHORITIES.
3. REFERENCES AND STANDARDS: ALL MATERIALS AND EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE STANDARDS LISTED BELOW. NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO APPLICABLE LAWS, ORDINANCES, RULES, OR REGULATIONS. IT IS NOT THE INTENT OF DRAWINGS OR SPECIFICATIONS TO REPEAT REQUIREMENTS OF CODES EXCEPT WHERE NECESSARY FOR COMPLETENESS OR CLARITY.
   - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
   - INSULATED CABLE ENGINEERS ASSOCIATION (ICEA).
   - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE).
   - NATIONAL ELECTRICAL CODE (NEC) (NFPA 70).
   - NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).
   - NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
   - INTERNATIONAL FIRE CODE (IFC).
   - INTERNATIONAL BUILDING CODE (IBC).
   - UNDERWRITERS LABORATORIES, INC. (UL).
   - LOW-VOLTAGE ELECTRICAL SAFETY ORDERS (OSHA).
   - HIGH-VOLTAGE ELECTRICAL SAFETY ORDERS (OSHA).
4. IF ANY OF THE REQUIREMENTS OF THE ABOVE STANDARDS ARE IN CONFLICT WITH ONE ANOTHER, OR WITH THE REQUIREMENTS OF THESE DRAWINGS OR SPECIFICATIONS, THE MOST STRINGENT REQUIREMENT SHALL GOVERN.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY MEASURES AND OSHA REQUIREMENTS ON SITE.
6. ALL DIMENSIONS OF EXISTING CONDITIONS MUST BE VERIFIED PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES NOTED.
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL BRACING AND SHORING OF EQUIPMENT DURING INSTALLATION.
8. ALL CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL PRIOR TO MAKING ANY CHANGES.

MANNER OF INSTALLATION:

9. CONTRACTOR SHALL READ AND UNDERSTAND ALL DRAWINGS AND EQUIPMENT MANUALS PRIOR TO INSTALLATION OR OPERATION OF EQUIPMENT. THE CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF ALL EQUIPMENT AND SHALL FOLLOW ALL MANUFACTURER INSTRUCTIONS AND RECOMMENDATIONS. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCY BETWEEN MANUFACTURER RECOMMENDATIONS AND THE INSTRUCTIONS INDICATED IN THIS DRAWING SET.
10. EXACT LOCATION AND MOUNTING OF ALL EQUIPMENT SHALL BE VERIFIED IN THE FIELD.
11. ALL WORK SHALL BE PERFORMED IN A SAFE, EFFICIENT, AND WORKMANLIKE MANNER. CONTRACTOR SHALL USE GOOD TRADE PRACTICES AS REQUIRED BY SECTION 110.12 OF THE NEC.

ELECTRICAL EQUIPMENT AND ENCLOSURES:

12. ALL EQUIPMENT AND COMPONENTS SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETL, ETC.).
13. ALL OUTDOOR EQUIPMENT ENCLOSURES SHALL BE RATED NEMA 3R, 4, OR 4X.
14. GALVANIZED 12 GAUGE STRUT AND ZINC-COATED OR STAINLESS-STEEL COMPONENTS (BOLTS, NUTS, ETC.) SHALL BE USED TO MOUNT ALL ENCLOSURES, PULL BOXES, AND OTHER EQUIPMENT .
15. TO PREVENT WATER BUILD-UP. WEEP HOLES SHALL BE PROVIDED IN ENCLOSURES WHERE CONDENSATION OR WATER BUILD-UP MAY OCCUR.
16. CONTRACTOR SHALL CLEAN ANY METAL SHAVINGS WITHIN ENCLOSURES, ON TOP OF ENCLOSURES, AT GROUND LEVEL, AND ANY ADDITIONAL AREAS WHERE OXIDIZED OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT CIRCUITS, OR OTHER DAMAGE.
17. ALL SWITCHES AND CIRCUIT BREAKERS USED AS SWITCHES SHALL BE LOCATED SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE, WHEN IN ITS HIGHEST POSITION, IS NOT MORE THAN 2.0 M (6 FT 7 IN.) ABOVE THE FLOOR OR WORKING PLATFORM. COORDINATE EQUIPMENT CONFIGURATIONS WITH THE REQUIRED HEIGHT OF CONCRETE PADS, IF ANY, TO ENSURE THAT DEVICE HANDLES DO NOT EXCEED HEIGHT LIMITATIONS.
18. CLEARANCE: DO NOT INSTALL ANY EQUIPMENT SUCH THAT IT OBSTRUCTS SPACES REQUIRED BY CODE IN FRONT OF ELECTRICAL EQUIPMENT, ACCESS DOORS, ETC. ALLOW SAFE EGRESS FROM ELECTRICAL EQUIPMENT IN COMPLIANCE WITH OSHA AND THE NEC.
19. THE INTERRUPTING RATINGS OF MAIN OCPD DEVICES, BRANCH OCPD DEVICES, AND BUS WITHSTAND CAPABILITY SHALL EACH MEET OR EXCEED THE MINIMUM AMPERE INTERRUPTING CAPACITY (AIC) RATING INDICATED (FULLY RATED EQUIPMENT).
20. NO PENETRATIONS OR CABLE ENTRIES IN THE TOP OF OUTDOOR ELECTRICAL ENCLOSURES. ENTER OUTDOOR ENCLOSURES FROM THE BOTTOM (PREFERRED) OR SIDE
21. CAULK ALONG BOTTOM PERIMETER OF EQUIPMENT MOUNTED ON CONCRETE SLABS TO PREVENT WATER ENTRY BETWEEN THE BOTTOM OF ENCLOSURE AND TOP OF CONCRETE SLAB.
22. EQUIPMENT SHALL BE PROTECTED WITH BOLLARDS OR OTHER MEANS WHERE SUBJECT TO UNRESTRICTED VEHICULAR ACCESS.

GROUNDING:

23. THE GROUNDING OF THE PHOTOVOLTAIC SYSTEM SHALL COMPLY WITH NEC 690 PART V. GROUNDING.
24. PROVIDE ALL GROUNDING AND BONDING OF ELECTRICAL EQUIPMENT, SYSTEMS, AND EQUIPMENT SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE, ARTICLE 250.
25. PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR WITH EACH FEEDER AND BRANCH CIRCUIT.
26. ALL EQUIPMENT GROUNDING CONDUCTORS (EGC), GROUNDING ELECTRODE CONDUCTORS (GEC), AND BONDING JUMPERS SHALL BE STRANDED COPPER.

CONDUITS AND RACEWAYS:

27. CONDUIT AND CABLE TRAY ROUTING SHOWN ON PLANS IS DIAGRAMMATIC. CONTRACTOR SHALL ROUTE AND LOCATE RACEWAYS TO SUIT SITE CONDITIONS. CONTRACTOR SHALL COORDINATE ALL WIRING AND RACEWAY ROUTING WITH THE ENGINEER.
28. WHERE CONDUIT AND RACEWAY ROUTING IS NOT SHOWN, AND DESTINATION ONLY IS INDICATED, CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LENGTHS REQUIRED. A SHOP DRAWING OF PROPOSED INSTALLATION SHALL BE SUPPLIED TO ENGINEER PRIOR TO INSTALLATION.
29. BENDS IN RACEWAY SHALL NOT DAMAGE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER.
30. MINIMUM CONDUIT SIZE SHALL BE 3/4", UON.
31. SUPPORT CONDUIT USING STEEL PIPE STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. SPACING OF CONDUIT SUPPORTS SHALL BE INSTALLED PER NEC REQUIREMENTS FOR THE TYPE OF CONDUIT BEING INSTALLED. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.
32. PROVIDE PULL, JUNCTION, OR CHRISTY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE SHOWN ON THE DRAWINGS.
33. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS.
34. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.
35. CONDUIT SIZES NOT SPECIFIED SHALL BE SIZED IN ACCORDANCE WITH NEC REQUIREMENTS WITH A MAXIMUM 40% FILL RATIO.
36. ALL CONDUITS SHALL BE FREE OF ANY OBSTRUCTIONS, COMPLETELY ASSEMBLED, AND PROPERLY SECURED BEFORE WIRE IS PULLED.
37. PER NEC 300.7(B), RACEWAY EXPANSION FITTINGS SHALL BE INSTALLED TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION, SOIL MOVEMENT, OR WHERE OTHERWISE NECESSARY. REFER TO CALCULATIONS SHEETS.
38. CONDUIT AND RACEWAY SYSTEMS SHALL BE WORKED INTO COMPLETE, INTEGRATED ARRANGEMENT WITH LIKE ELEMENTS TO MAKE WORK NEAT APPEARING AND FINISHED.
39. PVC CONDUIT SHALL BE A MINIMUM SCHEDULE 40 PVC FOR INDIVIDUAL CONDUITS DIRECT-BURIED IN THE GROUND AND SCHEDULE 80 WHERE EXPOSED TO PHYSICAL DAMAGE.
40. CONDUIT AND CABLE ENTRY INTO ALL ELECTRICAL ENCLOSURES SHALL BE THROUGH THE SIDES OR BOTTOM OF ENCLOSURE ONLY.
41. OPEN CONDUIT ENDS SHALL BE EQUIPPED WITH BUSHINGS AND APPROVED SEALANT TO REDUCE INTRUSION OF WATER, RODENTS, AND INSECTS.

CONDUCTORS AND CONDUCTOR INSTALLATION:

42. IN EVERY PULL BOX, TERMINAL BOX, GUTTER AND AT ALL PLACES WHERE WIRES MAY NOT BE READILY IDENTIFIED BY NAMEPLATE MARKINGS ON THE EQUIPMENT TO WHICH THEY CONNECT, IDENTIFY EACH CIRCUIT WITH A PLASTIC LABEL OR TAG FOR NUMBER AND POLARITY OR PHASE.
43. WHERE CONDUCTOR ROUTING IS NOT SHOWN, AND DESTINATION ONLY IS INDICATED, CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LENGTHS REQUIRED. A SHOP DRAWING OF PROPOSED INSTALLATION SHALL BE SUPPLIED TO ENGINEER PRIOR TO INSTALLATION.
44. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH REQUIREMENTS IN NEC 300.19.
45. THE MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG UNLESS OTHERWISE NOTED.
46. CONDUCTOR MARKING: INSULATION TYPE, VOLTAGE RATING, SIZE AND LISTING LABEL SHALL BE PRINTED WITH PERMANENT WHITE MARKINGS REPEATING ALONG ENTIRE LENGTH OF CONDUCTOR.
47. PROVIDE ALL NEW WIRE AND CABLE, MANUFACTURED WITHIN 12 MONTHS OF DELIVERY TO SITE AND CONTINUOUSLY STORED IN A CLEAN, DRY, VENTILATED SPACE FREE FROM TEMPERATURE EXTREMES AND WEATHER.
48. ALUMINUM TERMINATIONS SHALL BE MADE WITH UL LISTED COMPRESSION LUG FITTINGS. ALUMINUM TERMINATIONS SHALL NOT BE MADE WITH MECHANICAL LUG TERMINATIONS.
49. ANTI-OXIDANT COMPOUND SHALL BE USED WITH ALL ALUMINUM LUGS. CLEAN OXIDATION FROM ALUMINUM WIRE STRANDS THOROUGHLY IMMEDIATELY PRIOR TO APPLICATION OF COMPOUND.

MEDIUM VOLTAGE CONDUCTORS:

50. SPLICING OF MV CABLES IS NOT PERMITTED UNLESS APPROVED IN WRITING BY THE SYSTEM OWNER.
51. ALL MV CABLES SHALL BE SHIELDED WITH SHIELDS BONDED TO GROUND AT BOTH ENDS OF THE CIRCUIT. USE COPPER CONCENTRIC NEUTRAL SHIELDS, UNLESS OTHERWISE NOTED.
52. MV CONNECTORS SHALL BE INSTALLED ONLY BY TRAINED QUALIFIED TECHNICIANS.
53. MEDIUM VOLTAGE CABLES REQUIRE STRESS CONES AT THE TERMINATION OF THE CABLES. STRESS CONES SHALL BE OF THE PREFORMED TYPE SUITABLE FOR THE CABLE TO WHICH THEY ARE TO BE APPLIED.
54. MV TERMINATIONS SHALL BE IEEE 48 CLASS 1.
55. ELBOWS, BUSHINGS, AND TEST CAPS MUST BE CLEAN AND PROPERLY LUBRICATED.
56. POWER CABLE, ELBOW, AND MV TERMINATION DRAINS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR THE REMOVAL, STANDING OFF, AND/OR LANDING OF ELBOWS WITH MINIMUM BENDING RADIUS PER NEC 300.34.
57. MAINTAIN ALL CONDUIT ENTRIES TO EQUIPMENT WITHIN MANUFACTURER'S DESIGNATED CONDUIT ENTRY SPACE AND ARRANGE CONDUITS TO PERMIT THE MOST DIRECT ROUTING OF CABLES TO TERMINALS AND TO ALLOW ADEQUATE SLACK FOR DISCONNECTION AND PARKING OF LOADBREAK AND DEADBREAK ELBOW CONNECTORS.
58. ALL MEDIUM VOLTAGE CABLES SHALL BE LABELED AT EACH END, AT AN ACCESSIBLE POINT INSIDE EQUIPMENT ENCLOSURE, WITH CIRCUIT AND PHASE IDENTIFICATION CORRESPONDING TO THE DRAWINGS. LABELS SHALL BE ENGRAVED AND FILLED STAINLESS STEEL OR TWO-COLOR PHENOLIC, SECURED WITH UV-RESISTANT WIRE TIES. LABELS SHALL BE VISIBLE FROM OUTSIDE THE ENCLOSURE WITHOUT REACHING INSIDE OR MOVING CABLES.
59. MOUNT FAULT INDICATORS SUCH THAT INDICATOR WINDOW IS READILY VISIBLE WITHOUT THE NEED TO ENTER THE CABLE COMPARTMENT OR MOVE CONDUCTORS OR OTHER COMPONENTS. LOCATE REQUIRED CONDUCTOR IDENTIFICATION LABEL ADJACENT TO FAULT INDICATOR.
60. INSTALL HAND HOLES AS REQUIRED TO MINIMIZE MAXIMUM ALLOWABLE CABLE TENSION PER CABLE MANUFACTURER WHEN PULLING CABLES.
61. WHERE APPLICABLE, ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL BURIED CABLE MARKERS AT:
    - 61.1. BOTH SIDES OF ROAD CROSSINGS OUTSIDE OF PROJECT BOUNDARY
    - 61.2. BOTH SIDES OF WETLAND CROSSINGS.
    - 61.3. FENCE CROSSINGS.
    - 61.4. PROPERTY LINE CROSSINGS.
    - 61.5. UTILITY CROSSING.

DC CONDUCTORS:

62. ALL DC CONDUCTORS INCLUDING SOURCE CIRCUITS, HARNESSES, AND PV OUTPUT CIRCUITS SHALL BEAR PERMANENT CABLE LABELS AT ALL ENDS AND ALL CONNECTORS THAT UNIQUELY IDENTIFY THE CABLES AND ARE TRACEABLE TO THE ELECTRICAL DRAWINGS.
63. SPLIT LOOM SHALL BE USED TO PROTECT CONDUCTORS FROM SHARP EDGES AND FROM EXPOSURE TO DIRECT SUNLIGHT.
64. PV CIRCUITS AND EXPOSED TO FREE AIR OR DIRECTLY BURIED SHALL BE UL LISTED TO UL 845 AND CLASSIFIED AS USE-2 OR UL LISTED TO UL 4703 AND CLASSIFIED AS PV WIRE.
65. ALL CONDUCTORS SHALL BE RATED FOR 90°C IN WET LOCATIONS.
66. PV WIRES SHALL BE SUPPORTED AND SECURED WITH UV-RATED CABLE TIES (MIN NYLON 12) BY HELLERMAN-TYTON, OR BY HEYCO SUNBUNDLER PVC COATED, CRIMP LOCK, STAINLESS STEEL CABLE TIES. CLIP TAILS AFTER INSTALLATION. AVOID RUBBING, SHARP EDGES AND EXPOSURE TO DIRECT SUNLIGHT.
67. ALL CONDUCTORS, INCLUDING DC CONDUCTORS UTILIZED IN THE PV MODULE STRING CIRCUITS AND FOR CONDUCTORS BETWEEN COMBINERS AND INVERTERS, SHALL BEAR PERMANENT CABLE LABELS AT EACH END THAT UNIQUELY IDENTIFY THE CABLES AND ARE TRACEABLE TO THE ELECTRICAL DRAWINGS
68. ALL PLUG AND SOCKET CONNECTORS MATED TOGETHER SHALL BE OF THE SAME TYPE AND OF THE SAME MANUFACTURER. "COMPATIBLE" CONNECTORS SHALL NOT BE ACCEPTED.
69. ALL PLUG AND SOCKET CONNECTORS SHALL BE INSTALLED USING MANUFACTURER APPROVED TOOLS AND METHODS.

AC CONDUCTORS:

70. FOR ALL AC CIRCUITS, REQUIRED TORQUE VALUES SHALL BE WRITTEN ON CONDUCTORS AND TORQUE MARKS SHALL BE PRESENT AT LEAST ONCE PER CIRCUIT TERMINATION.
71. ALL AUXILIARY CIRCUIT BREAKERS SHALL HAVE TERMINALS RATED FOR 75°C.
72. ALL CONDUCTORS SHALL BE RATED FOR 90°C IN WET LOCATIONS.

CONDUCTOR COLORS:

73. DC CONDUCTOR COLOR CODING:

POSITIVE CONDUCTOR (+)	RED
NEGATIVE CONDUCTOR (-)	BLACK
GROUNDING CONDUCTOR (EGC)	GREEN

74. AC CONDUCTOR COLOR CODING:

CONDUCTOR:	< 34,500V	600/347V	480/277V	208/120V
PHASE A	BLACK	BROWN	BROWN	BLACK
PHASE B	RED	ORANGE	ORANGE	RED
PHASE C	BLUE	YELLOW	YELLOW	BLUE
GROUNDED	WHITE	GREY	GREY	WHITE
GROUNDING	GREEN/BARE	GREEN/BARE	GREEN/BARE	GREEN/BARE

75. FOR WIRE SIZES #8 AWG AND LARGER, COLOR BANDING TAPE, MIN. 2 INCHES WIDE, MAY BE USED AT ALL ACCESSIBLE LOCATIONS IN LIEU OF COLORED INSULATION.

MEDIUM VOLTAGE EQUIPMENT:

76. OVERHEAD MEDIUM VOLTAGE CIRCUITS SHALL BE CONSTRUCTED PER INTERCONNECTION UTILITY STANDARDS.
77. EQUIPMENT AND COMPONENTS SHALL BE LISTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL OR ETL, WHERE SUCH LISTING IS AVAILABLE FOR THE APPLICATION.
78. MEDIUM VOLTAGE EQUIPMENT INSTALLED OUTSIDE OF FENCES WHERE ACCESSIBLE TO THE PUBLIC SHALL COMPLY WITH NESC REQUIREMENTS FOR TAMPER-PROOF CONSTRUCTION.
79. LIGHTNING ARRESTORS SHALL BE INSTALLED AT UNDERGROUND CABLE TERMINATIONS ON RISER POLES, AND AT THE END OF A LOOP-FEED CONNECTED CIRCUIT OF TRANSFORMERS.

SAFETY SIGNS AND LABELS:

80. ELECTRICAL CONTRACTOR SHALL PROVIDE SIGNAGE ON ALL ELECTRICAL BOXES, JUNCTION BOXES, PULL BOXES, DC DISCONNECTS, CONDUIT RUNS, AC DISCONNECTS, SUB PANELS, MAIN SERVICES AND ANY OTHER EQUIPMENT THAT REQUIRES MARKING PER NEC ARTICLE 690, THE LOCAL FIRE CODE, AND AS SHOWN ON THE LABELS IN THIS PACKAGE.
81. ALL RELEVANT COMPONENTS OF THE PHOTOVOLTAIC SYSTEM SHALL BE CLEARLY MARKED AND LABELED IN ACCORDANCE WITH NEC ARTICLE 690.

TESTING:

82. INSULATION RESISTANCE TEST: TEST ALL AC AND DC CONDUCTORS FOR LINE-TO-GROUND AND LINE-TO-LINE INSULATION RESISTANCE. MINIMUM ACCEPTABLE RESISTANCE IS 100 MEG-OHMS. DOCUMENT A SCHEDULE OF ALL FEEDERS AND INDICATE LINE-TO-GROUND AND LINE-TO-LINE RESISTANCES.
83. GROUNDING SYSTEM TEST: CONTRACTOR SHALL PERFORM GROUND IMPEDANCE TEST BY 2 OR 3-POINT FALL-OF-POTENTIAL METHOD OR BY 4-POINT WENNER METHOD. GROUNDING SYSTEM RESISTANCE SHALL BE 25 OHMS OR AS INDICATED IN THE GROUNDING STUDY REPORT (IF PROVIDED), WHICHEVER VALUE IS LESS.
84. ALL EQUIPMENT RATED OVER 1000 VOLTS SHALL BE INSPECTED AND PERFORMANCE TESTED PRIOR TO BEING ENERGIZED AS REQUIRED BY NEC SECTION 225.56. A TEST REPORT COVERING THE RESULTS OF THE TESTS SHALL BE DELIVERED TO THE AUTHORITY HAVING JURISDICTION PRIOR TO ENERGIZATION.
85. TRENCH BACKFILL COMPACTION TEST: FIELD TEST COMPACTION IN FIRST 1/4 MILE OF TRENCH AT 2-3 LOCATIONS. IF COMPACTION METHOD PROVES ACCEPTABLE, NO FURTHER TESTS REQUIRED.\

CONTRACTOR

BIRCH CREEK

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ELECTRICAL NOTES

SHEET NO.

E-003

SOLAR DESIGN SUMMARY

BLOCK	PCS	MV CIRCUIT	540W MODULES			535W MODULES			TRACKER ROWS					BLOCK LOADING			
			RATING (W)	MOD QTY	STRING QTY	RATING (W)	MOD QTY	STRING QTY	PITCH	104-MOD (4-STRING)	78-MOD (3-STRING)	52-MOD (2-STRING)	TOTAL QTY	DC SIZE (KW)	AC SIZE (KVA)	APPROX. AC SET POINT (KW)	DC/AC RATIO
BLOCK-01	PCS-01	F1A	540	7,488	288	535			24'-9"	56	2	29	87	4,044	3,600	2,958	1.367
BLOCK-02	PCS-02	F1A	540	7,488	288	535	-	-	24'-9"	56	2	29	87	4,044	3,600	2,958	1.367
BLOCK-03	PCS-03	F1A	540	7,852	302	535	-	-	24'-9"	74	2	0	76	4,240	3,600	3,101	1.367
BLOCK-04	PCS-04	F1A	540	8,008	308	535	-	-	24'-9"	60	2	31	93	4,324	3,600	3,163	1.367
BLOCK-05	PCS-05	F1A	540	7,332	282	535	-	-	24'-9"	41	10	44	95	3,959	3,600	2,896	1.367
BLOCK-06	PCS-06	F1A	540	8,372	322	535	-	-	24'-9"	79	2	0	81	4,521	3,600	3,307	1.367
BLOCK-07	PCS-07	F1A	540	8,242	317	535			24'-9"	74	7	0	81	4,451	3,600	3,255	1.367
BLOCK-08	PCS-08	F1A	540	8,372	322	535	-	-	24'-9"	79	2	0	81	4,521	3,600	3,307	1.367
BLOCK-09	PCS-09	F1B	540	-	-	535	8,892	342	24'-9"	62	30	2	94	4,757	3,600	3,480	1.367
BLOCK-10	PCS-10	F1B	540	-	-	535	9,100	350	24'-9"	64	30	2	96	4,869	3,600	3,561	1.367
BLOCK-11	PCS-11	F1B	540	8,710	335	535	-	-	24'-9"	64	25	2	91	4,703	3,600	3,440	1.367
BLOCK-12	PCS-12	F1B	540	6,188	238	535	2,184	84	24'-9"	79	2	0	81	4,510	3,600	3,299	1.367
BLOCK-13	PCS-13	F1B	540	8,996	346	535	-	-	24'-9"	85	2	0	87	4,858	3,600	3,553	1.367
BLOCK-14	PCS-14	F1B	540	7,306	281	535	-	-	24'-9"	42	29	13	84	3,945	3,600	2,886	1.367
BLOCK-15	PCS-15	F1B	540	7,358	283	535			24'-9"	20	57	16	93	3,973	3,600	2,906	1.367
BLOCK-16	PCS-16	F1B	540	7,358	283	535			24'-9"	57	17	2	76	3,973	3,600	2,906	1.367
TOTAL	**-**	**-**	**-**	**109,070**	**4,195**	**-**	**20,176**	**776**	-	**992**	**221**	**170**	**1,383**	**69,692**	**57,600**	**50,976**	**1.367**

1 SYSTEM SUMMARY
SCALE: NTS

CONTRACTOR

BIRCH CREEK

BIRCH CREEK DEVELOPMENT, LLC
880 APOLLO STREET, SUITE 333
EL SEGUNDO, CA 90245

PROJECT

SALT CREEK

MASON CITY, IL 62664
40.183287°, -89.720427°

ENGINEER

STELLAVISE
SOLAR ENGINEERING

2535 CAMINO DEL RIO S, STE. 235
SAN DIEGO, CA 92108

WWW.STELLAVISE.COM (619) 205-5038

SEAL

REVISIONS

#	DESCRIPTION	DATE
A	10% DESIGN	09/02/2022

NOT FOR CONSTRUCTION
SEPTEMBER 02, 2022

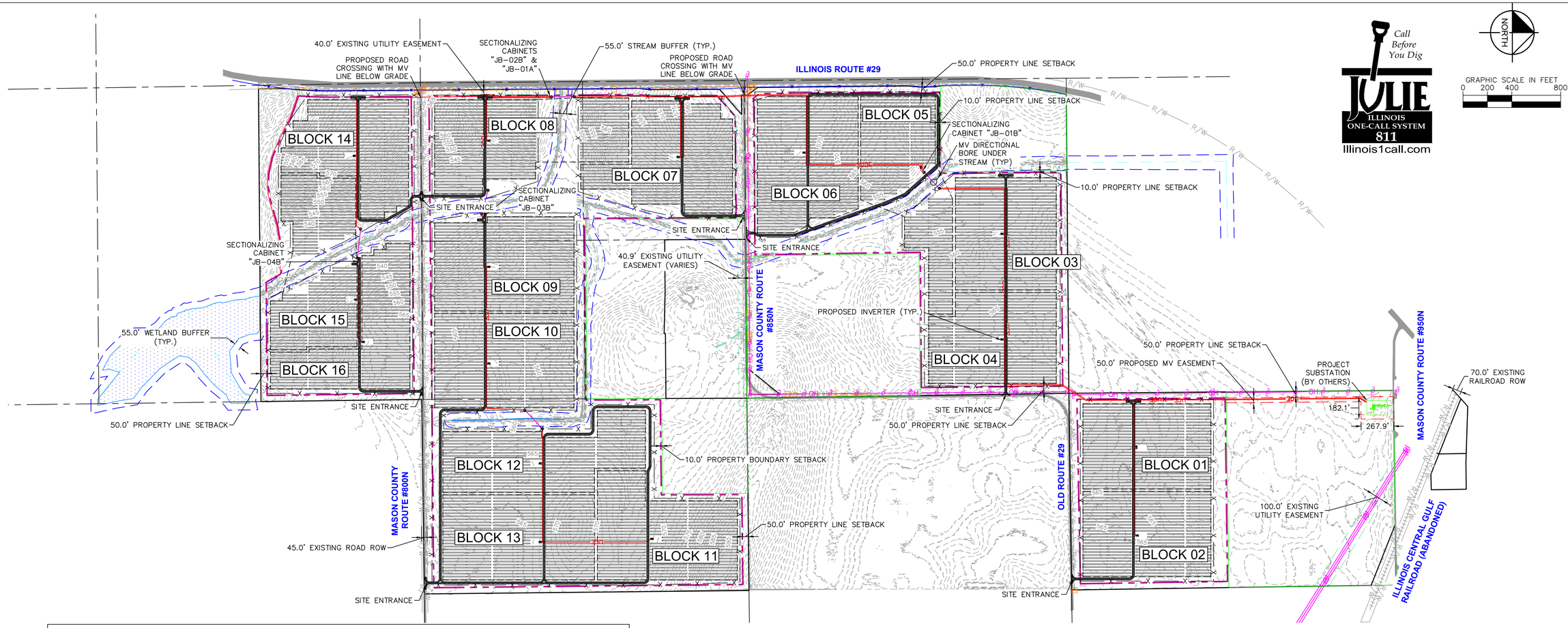
SALT CREEK SOLAR
MASON CITY, IL 62664

SHEET TITLE

SYSTEM SUMMARY

SHEET NO.

E-004



LAYER LEGEND

EXISTING ROAD (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
ROAD LABEL	ROAD
PROPERTY LINE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
PROJECT BOUNDARY (PER BIRCH CREEK SETBACKS, ROADS, FENCES.PDF RECEIVED 05/12/2022)	
EXISTING FIBER OPTICS LINE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	FO
EXISTING WATER PIPE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	W W
EXISTING ROW (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	R/W R/W
EXISTING OVERHEAD ELECTRIC (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	OH
EXISTING CONTOUR LINE	100
EXISTING UTILITY EASEMENT (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
SECTION LINE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
EXISTING POWER BOX (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	T
EXISTING ELECTRICAL POLE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
EXCLUSION AREA BOUNDARY LINE (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
NEW AREA BOUNDARY LINE (PER 0017373 ALTA PLAT RECEIVED 07/21/2022	
RESIDENCE SETBACK (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
STREAM CENTERLINE (PER SHAPEFILES WOTUS RECEIVED 05/12/2022)	
WETLAND/STREAM BUFFER (PER BIRCH CREEK SETBACKS, ROADS, FENCES.PDF RECEIVED 05/12/2022)	
PROPOSED EASEMENT AREA	
PROPOSED PANEL LIMITS	
PROPOSED UNDERGROUND LINE	UGE
PROPOSED FENCE	x x x x x x
RESIDENTIAL AREA (PER 007373 SALT CREEK 8-9-22.DWG RECEIVED 08/09/2022)	
WETLAND (PER SHAPEFILES WOTUS RECEIVED 05/12/2022)	
PROPOSED ACCESS ROAD	

QUANTITIES:

LENGTH OF ROADS	=	25,195 LF
LENGTH OF FENCES	=	46,267 LF
PROPERTY AREA	=	558.46 AC
FENCED AREA	=	329.82 AC

NOTES

1. SETBACKS (PER COORDINATION WITH MK SOLAR 05/12/2022 & PER SUP EXHIBIT A 08/04/2021 ARE AS FOLLOWS:
   - 1.1. PROPERTY LINES (EXTERNAL): VARIES BY PLAN
     - 1.1.2. 50 FT FROM ADJACENT PARCEL LINES
     - 1.1.3. 500 FT FROM NON-PARTICIPATING RESIDENTIALLY USED LOT LINES
     - 1.1.4. ADDITIONAL 36 FT IS SHOWN TO ACCOUNT FOR ROADS AND FENCES
   - 1.2. PROPERTY LINES (INTERNAL): 10 FT FROM PROPERTY LINE
   - 1.3. RESIDENCE: N/A
   - 1.4. WETLAND/STREAM: 55 FT
     - 1.4.1. ADDITIONAL 30 FT IS SHOWN TO ACCOUNT FOR FENCE AND EROSION CONTROL
   - 1.5. FLOODZONE: N/A
   - 1.6. SUBSTATION: N/A
   - 1.7. SURFACE STAINING/STRESSED VEGETATION AREAS: N/A
2. SETBACK FROM UTILITIES ALIGNS WITH EDGE OF UTILITY EASEMENT.
   - 2.1. ADDITIONAL 30 FT IS SHOWN TO ACCOUNT FOR FENCE AND EROSION CONTROL
3. ASSUMED ARCHEOLOGICAL BUFFER: N/A
4. ROADS & FENCING CAN BE PLACED WITHIN PROPERTY SETBACKS.
5. IT IS ASSUMED THAT NO STRUCTURES TO REMAIN ON PARCELS ASIDE FROM EXISTING HOUSE AND FACILITIES OUTSIDE BUILDABLE AREA.
6. ALL EXISTING PARCEL INFORMATION IS PROVIDED BY JANES SURVEYING 08/09/2022.
7. PROJECT LIMITS WERE PROVIDED BY MK SOLAR 05/09/2022.

Call Before You Dig
JULIE ILLINOIS ONE-CALL SYSTEM 811
Illinois1call.com

NORTH

GRAPHIC SCALE IN FEET
0 200 400 800

No.	REVISIONS	DATE

Kimley»Horn

4582 SOUTH ULSTER STREET, SUITE 1500
DENVER, CO 80237
WWW.KIMLEY-HORN.COM

PRELIMINARY - NOT FOR CONSTRUCTION

KHA PROJECT 196554000
DATE 09/16/2022
SCALE AS SHOWN
DESIGNED BY KLG
DRAWN BY KLG
CHECKED BY JMM

CONSTRAINTS MAP
50MWac
SALT CREEK SOLAR
SALT CREEK TOWNSHIP, IL

SHEET NUMBER
EXHIBIT

SG3425UD-MV/ SG3600UD-MV

SUNGROW
Clean power for all

Turnkey Station for North America 1500 Vdc System - MV Transformer Integrated

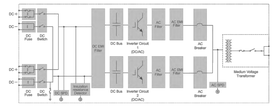
HIGH YIELD
- Advanced three-level technology, max. efficiency 98.9%
- Full power operation at 45 ℃ (113 ℉)
- Effective cooling, wide operation temperature
- Max. DC/AC ratio up to 2.0

SMART O&M
- Integrated current, voltage and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance

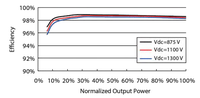
SAVED INVESTMENT
- Low transportation and installation cost due to 20-foot container size design
- DC-coupled storage interface and charging power from the grid, low system cost
- Integrated MV transformer and LV auxiliary power supply
- Q at night optional

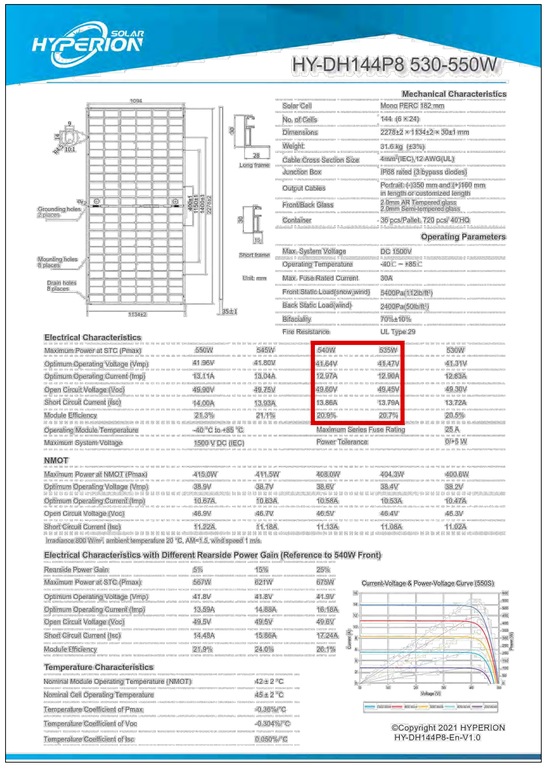
GRID SUPPORT
- Compliance with standards:UL 1741,UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Low / High voltage ride through (L/HVRT), L/HFRT, soft start/stop
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE (SG3425UD)





SG3425UD-MV/SG3600UD-MV

Type designation	SG3425UD-MV	SG3600UD-MV
Input (DC)		
Max. PV input voltage	1500 V	
Min. PV input voltage / Startup input voltage	875 V / 915 V	915 V / 955 V
Available DC fuse sizes	250A, 315A, 400A, 450A, 500A	
MPP voltage range	875 – 1300 V	915 – 1300 V
No. of independent MPP inputs	1	
No. of DC inputs	20 (optional: 22 / 24 / 26 / 28)	
Max. DC short-circuit current	10000 A	
PV array configuration	Negative grounding or floating	
Output (AC)		
AC output power	3425 kVA @ 45 ℃ (113 ℉), 3083 kVA @ 50 ℃ (122 ℉)	3600 kVA @ 45 ℃ (113 ℉), 3240 kVA @ 50 ℃ (122 ℉)
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 50 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power factor at nominal power / Ajustable power factor	> 0.99 / 0.8 leading - 0.8 lagging	
Efficiency		
Inverter Max. efficiency	98.9 %	
Inverter CEC efficiency	98.5 %	
Transformer		
Transformer rated power	3425 kVA	3600 kVA
Transformer max. power	3425 kVA	3600 kVA
LV / MV voltage	0.6 kV / (12 – 35) kV	0.63 kV / (12 – 35) kV
Transformer vector	Dy1 or Dy11	
Transformer cooling type	ONAN (Optional: KNAN)	
Protection		
DC input protection	Load break switch + fuse	
Inverter output protection	Circuit breaker	
AC MV output protection	Load break switch + fuse	
Overvoltage protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
General Data		
Dimensions (W*H*D)	6058 * 2896 * 2438 mm 238.5" * 114.0" * 96.0"	
Weight	18000 kg 39683.2 lbs	
Degree of protection	NEMA 4X(Electronic for Inverter) / NEMA 3R(Others)	
Auxiliary power supply	5kVA, 120Vac/240Vac; Optional: 10kVA, 480Vac/277Vac	
Operating ambient temperature range	-35 to 60 ℃ (> 45 ℃ derating) / optional: -40 to 60 ℃ (> 45 ℃ derating) -22 to 140 ℉ (> 113 ℉ derating) / optional: -40 to 140 ℉ (> 113 ℉ derating)	
Allowable relative humidity range	0 - 100 %	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (Standard) / > 1000 m (Customized) (3280.8 ft (standard) / > 3280.8 ft (Customized))	
DC-coupled storage interface	Optional	
Charging power from the grid	Optional	
Communication	Standard: RS485, Ethernet; Optional: optical fiber	
Compliance	UL 1741, IEEE 1547, UL1741 SA, NEC 2017, CSA C22.2 No.107.1-01	
Grid support	Q at night function (optional), L/HVRT, L/HFRT, Active & reactive power control and power ramp rate control, Volt-var, Frequency-watt	

CONTRACTOR

BIRCH CREEK

BIRCH CREEK DEVELOPMENT, LLC
880 APOLLO STREET, SUITE 333
EL SEGUNDO, CA 90245

PROJECT

SALT CREEK

MASON CITY, IL 62664
40.183287°, -89.720427°

ENGINEER

STELLAVISE
SOLAR ENGINEERING

2535 CAMINO DEL RIO S, STE. 235
SAN DIEGO, CA 92108

WWW.STELLAVISE.COM (619) 205-5038

SEAL

REVISIONS

#	DESCRIPTION	DATE
A	10% DESIGN	09/02/2022

NOT FOR CONSTRUCTION
SEPTEMBER 02, 2022

SALT CREEK SOLAR
MASON CITY, IL 62664

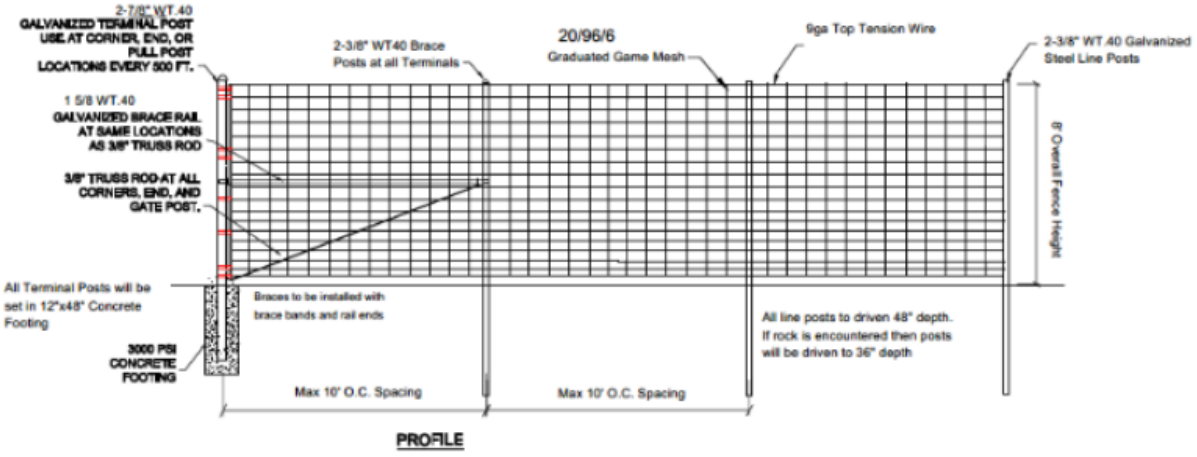
SHEET TITLE

EQUIPMENT SPECIFICATIONS

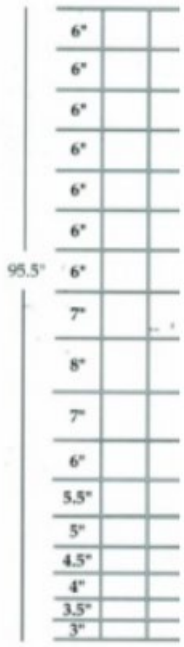
SHEET NO.

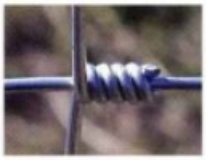
E-801

SECURITY FENCING SPECIFICATIONS



NOTES:
1) ALL TENSION WIRE TO BE HOG RINGED TO FENCE AT 18 INCHES ON CENTER.
2) ALL CONCRETE FOOTINGS DOMED FOR WATER SHED.
3) NO GROUNDING INCLUDED IN SCOPE.
4) ALL MATERIAL HAVE GALVANIZED FINISH.
5) BUILT TO STANDARD COMMERCIAL GRADE SPECIFICATIONS.





--Ideal for keeping in wild game or to keep deer out of yards and gardens
--This hinge joint fence allows for easier installation over hills and rough terrain.
--12 1/2 gauge Galvanzed Steel Wire with 10 gauge top and bottom wires
--Graduated Horizontal Wires (18 wires)
--6" vertical spacing
--330' Length Roll
--96" Tall

Appendix F

Land Ownership or Control

Ordinance 2021-45

APPLICATION FOR SPECIAL USE-SALT CREEK TOWNSHIP SOLAR, LLC

WHEREAS, the County of Mason has heretofore adopted an ordinance dividing the county into districts for the purpose of regulating land use and the use, heights, and areas of buildings, commonly referred to as the Mason County Zoning Ordinance;

WHEREAS, the County of Mason has heretofore adopted an ordinance to facilitate the construction, installation, and operation of Solar Energy Systems in the unincorporated areas of the county in a manner that promotes economic development and ensures the protection of health, safety, and welfare while also avoiding adverse impacts on adjoining property or on the environment;

WHEREAS, Section 7 of said zoning ordinance sets forth procedures for granting a special use permit for those special uses set forth under specific zoning classifications;

WHEREAS, Salt Creek Township Solar, LLC has made application for a special use permit to allow the development of a 50 MWac ground-mounted utility-scale solar project at property located on 8 different parcels immediately east of route 29 and north and south of CR 850N, southwest of Mason City, more particularly described as the W ½ of the SW of section 7 township 20 range 5, N ½ of the NE and the S ½ of the NE of section 24 township 20 range 6, NE and the SE of section 13, township 20 range 6, W ½ of the SW of section 18 township 20 range 5 and the SW of the SE of section 12 township 20 range 6. All parcels are zoned agricultural and owned by Charles L. McNeil as Trustee of the Charles L. McNeil Family Trust and Mary F. McNeil as Successor Trustee of the Lucile O. McNeil Trust. Parcel No. 20-07-300-001, 19-24-200-001, 19-24-200-002, 19-13-200-001, 19-13-400-001, 20-18-300-001, 19-12-400-004 and 19-13-400-002. (approx. 380 acres);

WHEREAS, it appears that proper notice has been given to adjacent property owners and municipalities within one and one-half miles as required by said ordinance, that a public hearing has been conducted by the Zoning Board of Appeals, and that the county board has jurisdiction in this matter;

WHEREAS, at the conclusion of the public hearing on this matter, the Mason County Zoning Board of Appeals made specific and written Findings of Fact and a Recommendation of Denial (See Attached Exhibit A);

WHEREAS, the County Board of Mason County has reviewed the written Findings of Fact and Recommendation;

WHEREAS; the County Board of Mason County has determined that the Findings of Fact demonstrate that the Applicant has complied with the material elements of the Mason County Solar Energy Ordinance (Ordinance 2021-23);

WHEREAS, the County Board of Mason County has the power to adopt the proposed Special Use Permit by passage of this Ordinance pursuant to 55 ILCS 5/5-12009.5;

WHEREAS, the County Board of Mason County has determined that the requirements of Section 7 of the Mason County Zoning Ordinance for the passage of an Ordinance approving of the Special Use Permit application of Salt Creek Township Solar, LLC, have been met;

WHEREAS, the County Board of Mason County has determined that approval of the Special Use Permit Application must be subject to certain conditions to ensure timely and orderly development of the proposed Project, and to address citizen concerns;

NOW, THEREFORE, BE IT RESOLVED by the County Board of Mason County that the terms and requirements established by the Mason County Zoning Ordinance and the Mason County Solar Ordinance for a special use permit to allow the requested use on the subject parcels have been met, and the application of Salt Creek Township Solar, LLC for a special use permit allowing development of a solar project be approved, subject to conditions attached hereto as Exhibit B, which are incorporated as part of this ordinance.

PASSED, ADOPTED, AND APPROVED by the County Board of Mason County this 14th day of September, 2021.

Kenneth Walker

KENNETH WALKER, Chairman

ATTEST:

Summer R Brown

SUMMER R. BROWN, County Clerk

CONDITIONS

In addition to all necessary requirements imposed by law or ordinance, the Applicant, Owner and/ or Operator of the Salt Creek Township Solar Farm shall abide by the following conditions. The violation of these conditions shall invalidate the Special Use Permit. All conditions are applicable the owner/ operator of the Solar Farm and applicable to all successors, assigns of the owner/ operator of the Solar Farm.

General Conditions

1. Provide updated an updated Decommissioning Plan and financial assurances every 5 years.
2. Provide emergency contact information on signage at each entrance to the facility.
3. Provide weekly construction and traffic updates to the County, and any other road authorities, during construction to mitigate any traffic flow issues.
4. Plan construction activities in such a manner to minimize traffic disruption during planting and harvest seasons.
5. This Special Use Permit is terminated after 35 years of operation. Prior to the expiration of the 35 years the owner/ operator may seek a new Special Use Permit for the property.
6. After commercial operation, provide yearly updates to the Mason County Zoning Office regarding the operation of the solar farm, to include the following: number of panels in operation, number of personnel hours involved in operation/ maintenance of the facility, any inoperable portions of the facility including the length of time the inoperable portions have been inoperable.
7. Meet with pertinent highway authorities within 30 days of approval of Special Use Permit.
8. The proposed site plan has been adjusted by the developer to accommodate objectors and as a condition of approval of the Special Use Permit the site plan has been revised as reflected in the Attached Areas of Exclusion and Site Map.

Conditions Prior to Issuance of Building Permits (all documents to be provided to the Mason County Zoning Office or their designee):

1. Obtain Illinois Department of Natural Resources response to EcoCAT submission and provide copy of response to Mason County Zoning Office. If the Illinois Department of Natural Resources recommends any action or mitigation the Applicant/ Owner shall abide by those recommendations.
2. Provide solar panel specifications to the Mason County Zoning Office.
3. Enter into an approved Decommissioning Plan with Mason County.
4. Enter into Road Use Agreements with all applicable road authorities.
5. Provide separate financial assurances in a form approved by the Mason County Board for the Decommissioning Plan and Road Use Agreements.
6. Provide a copy of the executed Agricultural Impact Mitigation Agreement.
7. Provide a copy of the Interconnection Agreement with Ameren.

Appendix G

Seed Lists

Seed Mix for Array Areas in Blocks 1, 2, 3, and 4 (Potential ICF Breeding Areas and surrounding area)

Native short grass prairie species and short forb species will be planted under the arrays in Blocks 1-4. The same seed mix will be planted between the rows to reduce the impact from shading of the panels from vegetation. Preferred short grass species will include little bluestem and sand lovegrass, and preferred forb species will include early, mid-season, and late bloomers (e.g., sand coreopsis (*Coreopsis lanceolata*), beard tongue (*Penstemon* sp.), pale purple coneflower (*Echinacea pallida*), Ohio spiderwort (*Tradescantia ohiensis*), wild bergamot (*Monarda fistulosa*), gray headed coneflower (*Ratibida pinnata*), black eyed Susan (*Rudbeckia hirta*), rough blazing star (*Liatris aspera*), rigid goldenrod (*Solidago rigida)* , and New England aster (*Symphyotrichum novae-angliae*). Specific mix will be dependent on availability during time of construction and will be approved by Illinois Department of Natural Resources.

ARRAY AREA SEED MIX

30%	FESTUCA RUBRA	CREEPING RED FESCUE
20%	FESTUCA OVINA	HARD FESCUE
14%	CAREX VULPINOIDEA	FOX SEDGE
10%	FESTUCA RUBRA SSP. COMMUTATA	CHEWINGS FESCUE
8%	POA PRATENSIS	KENTUCKY BLUEGRASS
8%	JUNCUS EFFUSUS	SOFT RUSH
5%	TRIFOLIUM PRATENSE	RED CLOVER
5%	TRIFOLIUM REPENS, 'DUTCH'	DUTCH WHITE CLOVER

SEEDING RATE: 25 LB PER ACRE
SEED WITH COVER CROP OF OATS, JAPANESE MILLET, WINTER PEA,
OR ANNUAL RYE DEPENDENT ON SEASON AT A RATE OF 30 LB PER ACRE.

SPECIFIED MIX DEPENDENT ON AVAILABILITY DURING TIME OF CONSTRUCTION,
OR APPROVED EQUAL

WETLAND MEADOW SEED MIX

COVER CROPS
LBS/AC

20	LOLIUM MULTIFLORUM	ANNUAL RYE

SEEDING RATE: 20LBS. PER AC

PERENNIAL SPECIES
OZ/AC

4	CAREX STIPATA	COMMON FOX SEDGE
6	CAREX VULPINOIDEA	SLENDER WHEATGRASS
40	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
1	SCIRPUS ATROVIRENS	GREEN BULRUSH

SEEDING RATE: AT LEAST 51 OZ PER AC

OPEN AREA SEED MIX

26.4%	LOLIUM PERENNE, 'CRAVE, TETRAPOLID	CRAVE PERENNIAL RYEGRASS
21%	DACTYLIS GLOMERATA, POTOMAC	POTOMAC ORCHARDGRASS
18.9%	POA PRATENSIS, 'GINGER'	GINGER KENTUCKY BLUEGRASS
12%	BROMUS BIEBERSTEINII, 'FLEET'	FLEET MEADOW BROME
5.7%	TRIFOLIUM HYBRIDUM	ALSIKE CLOVER
5%	FESTUCA ELATIOR X LOLIUM PERENNE	DUO FESTULOLIUM
4.8%	TRIFOLIUM PRATENSE, MEDIUM	MEDIUM RED CLOVER
2%	LOTUS CORNICULATUS, 'LEO'	LEO BIRD'S FOOT TREFOIL
1%	LINUM PERENNE	PERENNIAL BLUE FLAX
0.9%	COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS
0.8%	CHAMAECRISTA FASCICULATA	PARTRIDGE PEA
0.6%	CICHORIUM INTYBUS	BLUE CHICORY
0.5%	CHRYSANTHEMUM LEUCANTHEMUM	OXEYE DAISY
0.4%	SOLIDAGO NEMERALIS	GRAY GOLDENROD

SEEDING RATE: 30 LB PER ACRE
SEED WITH COVER CROP OF OATS, JAPANESE MILLET, WINTER PEA,
OR ANNUAL RYE DEPENDENT ON SEASON AT A RATE OF 12 LB PER ACRE.

SPECIFIED MIX DEPENDENT ON AVAILABILITY DURING TIME OF CONSTRUCTION,
OR APPROVED EQUAL